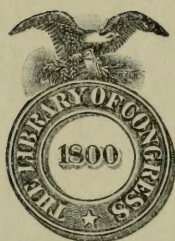


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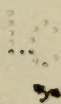
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Rural Veterinary Secrets

BY

Joseph
A. H. Hartwig, M. D. C.
"

A farmer's Text Book
for ready reference
and
The secret of success-
fully applying first aid
and home remedies to
ailing farm animals.



Watertown, Wisconsin

1921

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Watertown, Wis.

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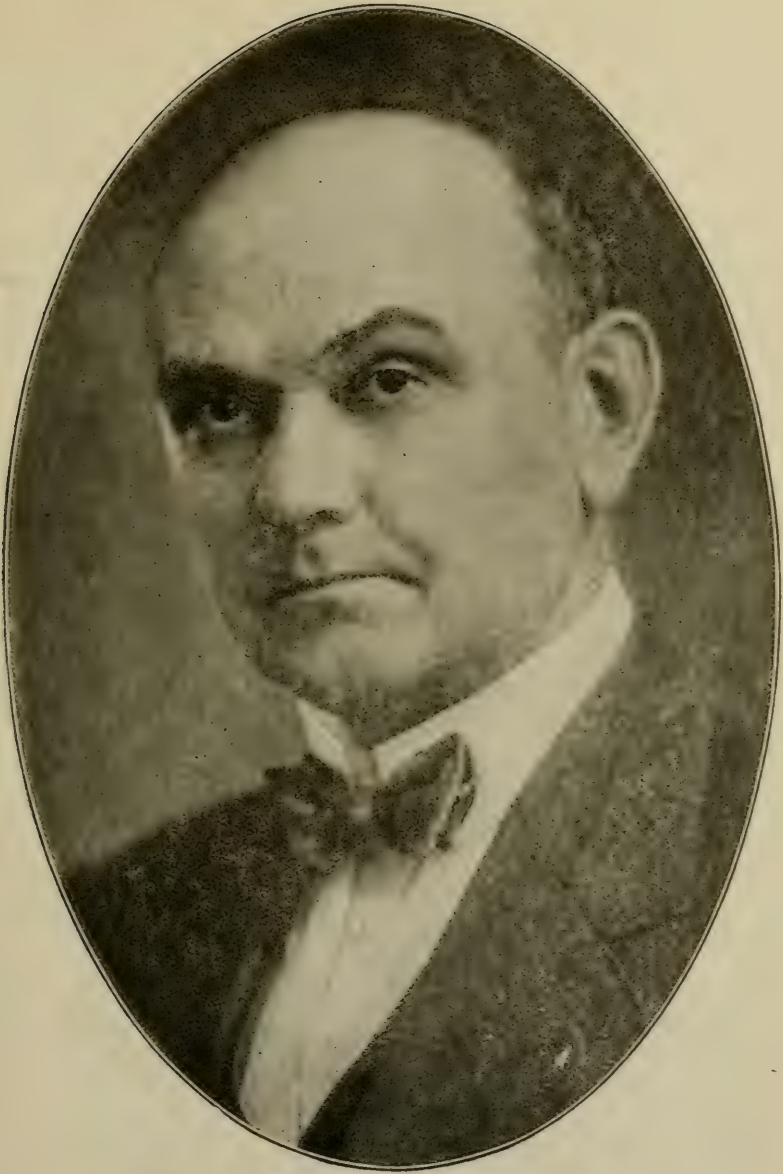
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Robert H. H. M.D.C.

AUTOBIOGRAPHY

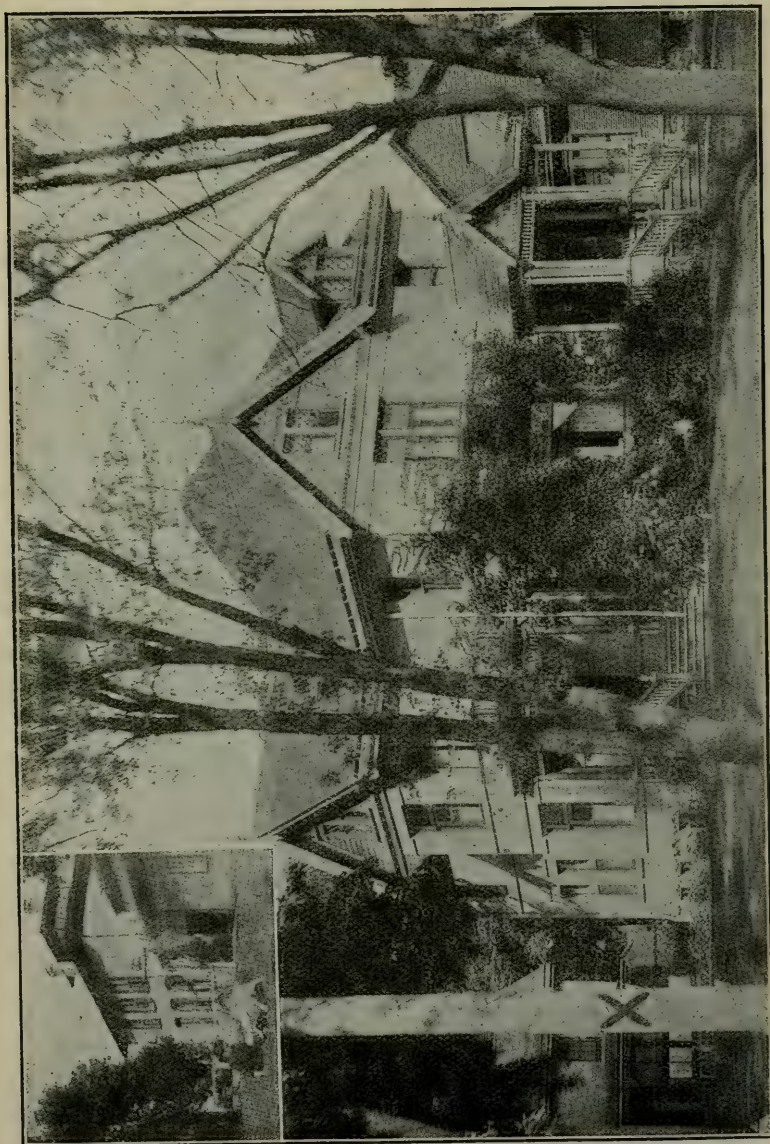
Dr. A. H. Hartwig, the author of "Rural Veterinary Secrets," was born on a stock and dairy farm in Watertown, Dodge Co., Wisconsin, where he had a good opportunity to study the natural habits and wants of ailing farm animals.

He received his preliminary education in the public schools and Northwestern College of Watertown, Wis. At the age of seventeen he expressed the desire to study veterinary science and become a veterinary physician and surgeon. However, as his services could not be spared on the farm at that time, he was obliged to abandon the idea, at least for the time being. When twenty years of age he entered the short course in Agriculture of the University of Wisconsin, under the direction of Dean Henry, it being the second and third year of the existence of that course. Dr. V. T. Atkinson, the first State Veterinarian of Wisconsin, gave a course of lectures and demonstrations in veterinary science. These lectures and demonstrations proved of particular interest to the young agricultural student, and again he was inspired with the determination to take up this interesting study, but neither the time nor the means to further attend college could be spared.

After concluding his university studies he returned home and devoted most of his time to breeding draft horses, coach horses, and dairy cattle. In 1892 he made a tour through Europe. There he visited the various veterinary colleges in the Old World. On his return he brought with him an importation of Oldenburg coach horses. His experience in stock breeding convinced him that a knowledge of veterinary medicine and surgery would be of great benefit to himself and his community. He again determined to become a veterinarian and then actually entered the Chicago Veterinary College, from which he was graduated in the year 1895.

After graduation he entered upon his practice as a veterinarian in Watertown, Wisconsin, and adjacent community, which he successfully continued for twenty-seven years. During this time he held various important positions in connection with his profession. He was president of the Wisconsin Society of Veterinary Graduates; secretary of the Wisconsin State Veterinary Society; State Veterinarian of Wisconsin; Veterinary Editor of "Hoard's Dairyman"; publisher and proprietor of "The Farmer's Veterinary Advisor," and at the present time is Veterinary Inspector for the United States Bureau of Animal Industry. While editor of "Hoard's Dairyman" he discovered the Air Treatment for milk fever, which is now used the world over and is saving the lives of thousands of valuable farm animals.

The experience thus acquired he is now giving to his fellow farmers and stock owners in the form of "Rural Veterinary Secrets."



Residence of Dr. A. H. Hartwig, Watertown, Wis.
(Inset) Residence on farm where Dr. Hartwig was born and reared



Dr. Hartwig's Veterinary Hospital, established in 1895

Department of Surgery



at Dr. Hartwig's Veterinary Hospital

PREFACE

My purpose in presenting "Rural Veterinary Secrets" to the farmer and other owners of domesticated animals shall be to educate them to use home remedies intelligently whenever they are applicable in case of emergency, and to properly comfort and care for the patient till medical aid can be summoned; to teach my readers to use the right remedy in the right place in case of emergency, instead of employing anything and everything that might be suggested by the casual observer; to avoid the misapplication of drugs, which so often leads to the destruction of valuable farm animals; and to give professional advice to those who are in need, as well as those who seek professional knowledge on those subjects.

In order that my readers may readily understand what I am to present to them, I will employ common farmer language, avoiding technical expressions as much as possible. I shall prescribe the most practical and effective remedies for each particular case, regardless of who might be the manufacturer thereof. The remedies prescribed shall be those which I have found the most successful and practical during my twenty-seven years of practice.

I have decided to place the knowledge and experience obtained in these twenty-seven years of continued and uninterrupted practice as a veterinarian before my readers in concise form, boiled down for quick and ready reference, in this, my first edition of "Rural Veterinary Secrets."

A. H. HARTWIG, M. D. C.

Watertown, Wisconsin, July 1st, 1921.

TO
THE AMERICAN SOCIETY OF EQUITY

In testimony of the author's high esteem and appreciation of the principles and service to the public of the society, lending me inspiration and initiative in my profession and this undertaking, I dedicate this work.

A. H. HARTWIG, M. D. C.

CHAPTER I.

Diseases Common to the Respiratory Organs

ACUTE NASAL CATARRH

(Rhinitis, Acute Coryza).

An acute catarrh of the air passages of the head. It may occur as a primary affection or may be secondary to another disease.

The common predisposing cause is cold. Catarrh is most frequent during the changeable weather of the late fall and early spring. The exciting cause is undoubtedly infection.

Nearly all of the diseases of the respiratory tract are accompanied by catarrh, as are specific infectious diseases, such as strangles, influenza, hog-cholera, glanders.

SYMPTOMS

The general condition of the patient is usually somewhat disturbed; it seems stupid, languid, and shows slight fever. The mucous membrane of the nose is swollen and reddened and at first drier than normal; later an irritant, watery discharge appears, which in a day or two becomes turbid and more profuse. In the earlier stages the patient sneezes frequently and rubs its nose against objects. The nasal discharge dries and forms crusts at the openings of the nostrils. In exceptional cases small, round, superficial erosions are noted on the mucous membrane, which usually heal in a few days. In severe cases there is conjunctivitis present. If the larynx is involved there is cough; if the pharynx, difficulty in swallowing. The submaxillary lymph glands in the horse are slightly swollen.

The course is usually rapid and the termination favorable. The condition in ordinary cases disappears in seven to ten days.

TREATMENT

The acute catarrh seldom requires treatment. Protecting the patient from draughts and dust is all that is necessary in the aver-

age case. When, however, the discharge is profuse or the patient shows fever, a douche consisting of a solution of one tablespoonful of common salt dissolved in two quarts of tepid water may be injected into the nostrils and allowed to flush the anterior air chambers once or twice daily. Inhalations of volatile substances are of value. Turpentine or benzoin (1 to 5 per cent in form of steam) may be tried. The crust on the nostrils may be greased with lard or vaseline.

BLEEDING FROM THE NOSE, HEMORRHAGES

(Epistaxis)

In some families of horses hemorrhages are an inherited predisposition. In such cases the bleeding occurs without apparent cause. It may follow over-exertion as in the case of the race horse. It may also be caused by passing tubes, sponges, and other instruments up into the nostrils. In forcibly ejecting dust and foreign matter from the nose, horses sometimes induce hemorrhage. Fractures of the facial, nasal and maxillary bones and tumors in the nose may be followed by nose bleeding.

SYMPTOMS

It is usually not difficult to determine the origin of the hemorrhage, but to find the cause may require a most careful examination of the patient. Pulmonary hemorrhages are characterized by a bright red, foamy nasal discharge emitted from both nostrils and accomplished by cough, dyspnea, and weak pulse. When placing your ear to the chest, however, you will hear a rattling sound with each breath of the patient. If, however, the hemorrhage is from the nose, these rattling sounds will not be noticed, although some of the blood may be inspirated into the lungs and confuse the layman as to the proper location of the hemorrhage. In hemorrhages from the stomach the blood is also discharged through the nose in the case of the horse and ox, but is more or less clotted, brown in color, of acid reaction, and mixed with food particles. In the case of the hog and dog the blood from stomach hemorrhages is vomited through the mouth.

TREATMENT

The patient should be kept in a cool and quiet place. If hemorrhages are from the nose or anterior air chambers, inject up into the nostrils the juice of several lemons. This, with rest and quiet, will arrest the hemorrhage temporarily. Then give a teaspoonful of Ferritone (Elk's) for an adult in moist food three times daily. This will increase the fibrin and red corpuscles of the blood, which makes a firm clot and heals completely the ruptured vessel, besides strengthening the walls of the blood vessels. If the hemorrhage is in the lungs or stomach, the injections of lemon juice are not so effective and may be omitted, but the Ferritone should be given regularly as above directed and the treatment continued for a week or two after the hemorrhage has stopped.

NASAL POLYPI



Polypus in the Nostril.

These are wart-like tumors growing in the nostril as shown in the accompanying illustration. The only remedy is to remove them with a small wire ecraseur, which is especially designed for this purpose. The operation is simple and usually has no dangerous after effects.

CATARRHAL LARYNGITIS

Catarrhal laryngitis is one of the commonest diseases of horses and cattle. It frequently assumes an enzootic form, being very prevalent during the changeable weather of spring and fall. The disease may be primary or secondary.

The causes of primary laryngitis are: Chilling, inhalation of irritant dust, gases, ingestion of fermenting foods (brewer's grains, distillery slops, potato residue), continued bellowing of cattle, throat latch of bridle too tight, and primary infections.

Secondary laryngitis accompanies many of the infectious diseases, especially influenza and strangles of the horse, tuberculosis of the ox, cholera of swine, and verminous bronchitis of sheep. A spread of inflammation from neighboring organs (pharynx, trachea) may induce laryngitis. The causes of chronic catarrhal laryngitis are the same as those of the acute form, the irritant acting mildly but repeatedly or persistently.

SYMPTOMS

A dominant symptom of laryngitis is a dry, harsh cough which the patient seeks to suppress. It is especially noticeable when the animal is brought out into cold air or given a cold drink of water. Excitement also induces cough. The larynx is sensitive to pressure, which may bring about a spell of coughing. In some patients hoarseness is evident. On listening to the larynx rough and sometimes whistling tones are heard, which tend to diminish in intensity toward the chest. Nasal discharge is usually present. If the pharynx is also involved there will be difficulty in swallowing. The lymph glands of the submaxillary region are swollen and sensitive. Except in secondary laryngitis the pulse and temperature remain about normal. There is difficulty in breathing only when there is marked swelling of the mucosa.

DIAGNOSIS

The diagnosis depends upon the presence of cough, sensitiveness of the larynx, mild fever, and the negative evidence adduced from a thorough examination of the lungs. Secondary laryngitis may be distinguished from primary forms by the high temperature, general depression of the patient and symptoms of the primary disease.

In acute catarrhal laryngitis the course is usually six to ten days, ending in complete recovery. Neglected cases may become chronic and last for months, causing persistent, obstinate cough, but usually no further symptoms.

TREATMENT

The patient should be allowed fresh air (not too cold) free from drafts, dust and stable gases. If the weather permits, exercise in the open should be allowed. In mild attacks horses may be employed at light work, provided they are protected against high wind or drenching rains. The food should be laxative (roots, grass) and free from dust.

Hot applications to the throat are valuable. During the early stages inhalations of medicated steam are of service. See directions for steaming in acute nasal catarrh and give the same medical treatment. If you suspect the cause to be of an infectious nature, separate the well from the sick and thoroughly disinfect the stable.

CROUPOUS LARYNGITIS

A disease of the larynx and laryngeal mucosa in which the pharynx and trachea are also involved. This is rather rare, occurring mostly in sheep and cattle and more rarely in horses and swine. It is caused usually by inhaling irritating gases, smoke, strong fumes of disinfectant, and sometimes from driving through dust to increase the weight of wool.

SYMPTOMS

In the beginning the symptoms are the same as in catarrhal laryngitis, except that the patient becomes more rapidly emaciated and loses appetite. There is also a swelling and sensitiveness of the throat.

TREATMENT

The treatment consists of the same medicinal agents and inhalations of medicated steam as in catarrhal laryngitis, except that a tracheotomy tube might be used in addition in the early stages of the disease.



Horse with chronic Oezena that was operated at the Fort Atkinson
Veterinary Hospital, June 11, 1910.

NASAL CATARRH (Oezena)

This form almost invariably follows some other disease involving the respiratory tract, such as bad teeth with filling of the frontal or maxillary sinuses of the head with pus. It may also accompany glanders, tumors of the nostrils, animal parasites, chronic or verminous bronchitis.

SYMPTOMS

The principal symptom is a nasal discharge, which varies greatly in quantity and character. The quantity of discharge is not always the same, being more profuse at times owing to environments, weather conditions, etc. In character the discharge may be mucous, purulent, blood-streaked, or contain caseated lumps. If due to decayed teeth or bones of the head, it will have a very offensive odor. The maxillary lymph glands may become enlarged, but usually do not adhere to the jaw. If the sinuses of the head become filled with pus there is usually a marked swelling of the parts affected.

TREATMENT

Before resorting to treatment of this ailment we must ascertain the cause and remove it. A careful examination of the teeth must first be made and if any decayed ones are found they must be extracted. Then the nostrils should be carefully examined in search of nasal tumors. If neither is found, explore the frontal and maxillary sinuses by sounding with gentle taps of one or two fingers on the suspected parts. If the sinuses are not filled there will be a hollow sound, while if filled with pus they will appear solid. If one or more of these sinuses be filled it will be necessary to cut a hole through the bone and remove the pus surgically.

If neither of the above is found, a nasal douche, with a tablespoonful of salt to a gallon of warm water, may be resorted to once daily. If the discharge from the nostrils has a fetid odor, five grains of permanganate of potash may be dissolved in a gallon of warm water and used as a douche instead of the salt solution. Iron tonics, such as tincture chloride of iron or dried sulphate of iron, should be given in food twice daily in connection with some bitter stomachic. For this purpose there is nothing more effective than a large teaspoonful of Ferritone, in moist food three times daily.

It acts directly upon the blood and lessens the discharge from the nasal membranes. Ferritone is a new and almost specific remedy for all nasal discharges now sold by all first class druggists.

CATARRHAL BRONCHITIS

Bronchitis means, or is understood to be an inflammation of the large bronchi (air tubes). Bronchiolitis is used to express an inflammation of the capillary bronchi.

Bronchitis occurs either as a primary or secondary disease. It is very common among all domesticated animals, particularly during the spring and fall, when it may become enzootic among horses and cattle. It may occur alone, but is usually associated with tracheitis and laryngitis (catarrh of the air passages), or on the other hand it may attend pneumonia (bronchopneumonia).

Several different forms of catarrhal bronchitis are recognized. When the exudate is fluid and abundant, moist bronchitis or blennorrhea of the bronchi is spoken of. If the exudate is rather limited and not so fluid a dry bronchitis exists. A fetid bronchitis develops from a bacterial decomposition of the exudate. From the standpoint of course, catarrhal bronchitis may be either acute or chronic, and from the causes a verminous and a mycotic bronchitis may be distinguished.

The causes are usually refrigeration (changeable weather), inhalation of mechanical and chemical irritants (dust, smoke, chemical fumes), aspiration of fluids, such as liquid medicines unskillfully administered, blood, pus or solid matter, such as food which gains access to the windpipe, especially when the pharynx is paralyzed. Certain animal parasites and bacteria are also causes.

Secondary bronchitis occurs with most of the infectious diseases affecting the respiratory tract (influenza, strangles, tuberculosis, hog-cholera).

SYMPTOMS

The characteristic symptoms of acute catarrhal bronchitis are cough, which at first is short, dry and painful, but later with the accumulation of liquid exudate becomes looser and less painful. Nasal discharge is present and during the act of coughing bronchial

slime is ejected through the mouth and nose. In the early stages especially the respirations are increased. Percussion is normal and on listening rales are heard. Rales may be absent in the early stages, but will appear gradually about the second or third day. The character of the rale will depend upon the size of the bronchus involved and the consistency of the exudate. In the larger bronchi, provided the exudate is rather fluid, the rale is of the character of bursting large bubbles, while in the smaller bronchi the rales are much finer and of a crackling character. If the bronchial mucosa is much swollen, narrowing the lumen of the bronchi, whistling, piping or hissing tones may be heard. As a rule the animal shows fever in the early stages (104 to 106 degrees F.), but usually within two or three days the temperature drops. With the continuance of the fever the pulse frequency increases.

CHRONIC CATARRHAL BRONCHITIS usually develops from the acute form. It may occur, however, as a symptom of chronic heart and lung disease. It is frequently associated with chronic pulmonary emphysema or seen to accompany such chronic infectious diseases as tuberculosis, glanders, or verminous pneumonia. Generally speaking, chronic bronchitis leads to irreparable injury, not only of the walls of the bronchi, but also of the neighboring lung tissue. The symptoms of chronic bronchitis are much the same as those of the acute, except that the condition is feverless and suffers many periodical increases of violence. The general condition of the patient may not be much disturbed, and the only evidences of the disorder are chronic cough, difficulty in breathing, and nasal discharge, which is often foamy and white in appearance. Obviously, if chronic bronchitis is a symptom of an infectious disease like tuberculosis or glanders, the symptoms which typify these conditions will be associated with those of bronchitis. In practice chronic bronchitis is most commonly met with in horses suffering from "heaves." It also occurs frequently in dairy cows in the Eastern States, especially during raw, damp weather. The principal symptoms are a persistent cough and slight nasal discharge, which is usually wiped off with the tongue. There are no constitutional symptoms. The course is benign except in neglected cases.

In healing, the acute form usually terminates in two to three weeks. When the smaller bronchi become involved, the course is more prolonged and is apt to lead to bronchopneumonia and death. Death may also result from pulmonary edema.

Chronic bronchitis may last for months or years, depending

upon the cause. As a rule the patient becomes anemic, cachectic, and finally death results from lack of nutrition.

DIAGNOSIS

The diagnosis of bronchial catarrh is, as a rule, not difficult. The presence of the characteristic rales are evidence enough, especially when taken into consideration with the other symptoms and course of the disease. It is sometimes impossible to determine whether the bronchitis is primary or secondary. Generally, however, when bronchitis is secondary to some acute infectious disease the high temperature which the patient shows is indicative. When associated with a chronic infection a thorough clinical examination of the patient will usually reveal the presence of a primary disease (tuberculosis, tuberculin test; glanders, various tests).

TREATMENT

The patient should be kept in a light, clean, well ventilated place and every attention given to the hygiene of the skin. A horse should be covered with a light blanket, and the legs, if cold, wrapped in soft bandages. If labored breathing is very marked, the chest should be rubbed freely with Elk's Electric Cream. The food should be laxative (bran, oats, grass, carrots, turnips, etc.). The bowels should be kept open by giving two tablespoonfuls or Bovolax in moist food twice daily. If the cough is dry, inhalations of medicated steam (see steaming) may be resorted to. The following prescription has proven very successful.

Take of: Syrup of white pine—1 pint.
Fluid extract belladonna—1 dram.
Febris powders (National)—2 ounces.

Mix and give one ounce every two hours. Febris powders might be given alone in the absence of the other two, provided they cannot be obtained. These should be given in teaspoonful doses three times daily.

PLEURITIS

Pleuritis is an inflammation of the pleura. It is nearly always a secondary condition in animals.

Pleuritis affects all animals, but principally the horse. In the horse it is usually a symptom of infectious fibrinous pneumonia; in the ox of tuberculosis, contagious pleuropneumonia and hemorrhagic septicemia, and in swine most frequently of so-called swine plague. Pleuritis, however, may occur unattended by pneumonia, as is frequently observed in horses.

Pleuritis in animals is always due to infection. Cold, which was believed to be the most potent etiological factor, is now considered merely predisposing (pleuritis in sheep following shearing; exposure of horses to cold wind and rain). The micro-organisms which produce pleuritis are many. Rarely is pleuritis a primary disease—it is most commonly seen in practice accompanying diseases of the lungs (pleuropneumonia). The micro-organisms causing pleuritis may enter as follows: (1) Through penetrating thoracic wounds; (2) through deep contusions on the chest wall, especially if rib fractures be present (kicks, blows, falls); (3) from disease foci in the lung, which are in contact with the pleura; (4) via blood and lymph micro-organisms of certain specific diseases; notably those which affect principally the respiratory tract. The latter may also invade the pleura and cause inflammation thereof (influenza, fibrinous pneumonia, swine plague, hemorrhagic septicemia, acute rheumatism). It may happen that the dominant lesions are in the pleura, in which case primary pleuritis is spoken of (pleurisy of the horse without pneumonia).

As predisposing factors may be mentioned: Chilling (cold), over-exertion, long railway transports, and acute diseases of the respiratory tract (laryngitis). Subacute and chronic pleuritis may accompany tuberculosis, glanders, contagious pleuropneumonia of the ox, tumors (spread of sarcoma or carcinoma via contiguity of tissue), or metastasis, and animal parasites.

SYMPTOMS

Depending upon whether it is acute or chronic, primary or secondary, the symptoms of pleuritis will vary greatly. In mild circumscribed and in chronic pleuritis the symptoms are so vague that the condition is rarely recognized clinically. In the acute form, which is at times primary, they are as follows:

(1) First stage (congestion): The onset is sudden. The patient stops eating, seems stupid, and may show pains simulating mild colic. There is often a marked chill during which the temperature rises rapidly to 104 to 106 degrees F. The muscles of the thorax tremble. The pulse is frequent (70 to 80), small and hard. The respirations are accelerated (25 to 40) and of the abdominal type. If the pain is great, and the diaphragm not involved, the ribs may be rolled forward and held, breathing being performed by the flanks. The patient may not show cough or nasal discharge.

Sounding the thorax in this stage pains the patient and causes coughing. Sensitiveness is sometimes shown on palpating the intercostal spaces, especially in the region of the elbow. If the examiner's hand be laid against the thorax, marked vibrations may be felt. Unless the lung is involved in this stage, there is no change in the percussion sound.

The respirations seem shorter than normal and of interrupted, catching character. On listening, a rubbing, grating, frictional sound is heard with the respirations. The animal is usually stiff and when turned "moves as one piece" in a rigid, wooden fashion.

(2) Second stage (effusion): In this stage the clinical picture is a good deal modified. The patient finds more difficulty in breathing and the character of the breathing is changed, depending upon the quantity of exudate in the chest. If a considerable amount of fluid forms rather rapidly in the thorax (25 to 40 quarts) at inspiration the ribs are rolled forward at a maximum and at expiration, which is accomplished by a double-pumping movement of the flanks, the lumbar region is elevated and the anus protruded, the manner of performing the respirations much resembling that noted in pulmonary emphysema. A groove is formed along the costal cartilages at each expiration. The nostrils are dilated and often flapping. Percussion: As high as the fluid in the chest extends, a marked flatness with resistance under the hammer is noted. The flat area extends across the ribs in a straight horizontal line. Above this line subdued resonance is heard. Changing the position of the body will shift the horizontal line. (Only feasible in small animals.) When effusion occurs the frictional sound disappears (in some instances it may still be heard above the area of flatness), and, as a rule, no respiratory sounds can be determined below the horizontal line. Above it the vesicular murmur is harsh; tubular breathing is frequently present.

The heart beat is weakened in this stage and may often be heard more distinctly on the right than on the left side of the chest.

The pulse is rapid and softer than in the first stage. The temperature is very irregular. When effusion takes place it usually drops to nearly normal, but may rise again later. Its character is decidedly intermittent or even remittent. Very high fever speaks for purulent pleuritis. General condition: In acute pleuritis the patient often remains standing during the entire attack (horse). If the patient lies down in the first stage, due to pain, it rests on the well side, or if the condition is bilateral, on the sternum. In the stage of effusion, the patient lies on the diseased side. In pleuritis there is a tendency to swell on pedent portions of the body (under chest, etc.). A total lack of appetite persists.

Mild cases make a very rapid recovery and are often not recognized during life. The effusion forms rapidly; in three to four days the thorax may be half filled; the resorption of the exudate however, takes place gradually and may require two to three weeks, or even several months, during which time the life of the patient is in jeopardy. The more serious the effusion, the more likely and rapid the resorption. With much fibrinous exudate present, adhesions between lung and thoracic wall are frequent. These adhesions usually persist and cause the patient to be ever afterward short-winded. Chronic pleuritis is incurable. Death in acute causes may follow from asphyxia or exhaustion in two to three weeks.

TREATMENT

The drugs used in the treatment of this disease are few and simple. If the fever is high and needs to be checked, give a teaspoonful of National Febris Compound in drinking water three times daily. If the fever is not controlled, increase the frequency of the dose to every three or four hours. This also has a diuretic effect, which is very essential in this treatment.

If breathing is very painful, the pains can be relieved by a hypodermic injection of two to three grains of morphine, or still better, a tablespoonful of National Anodyne given every hour with a dose syringe until relieved.

When the thoracic cavity fills excessively with fluid, the same must be removed by means of a trocar and canula. The latter had better be left to a competent veterinarian.

INFLAMMATION OF THE LUNGS (Pneumonia)

Pneumonia exists in various forms, the details of which will be too technical for the average farmer and stockman to understand. We will, therefore, discuss pneumonia in its general term, giving its general appearance, symptoms and treatment.

Pneumonia is an inflammation of the lung. The existence of pneumonia as a primary disease in animals is open to question. At any rate, it has not been proven.

SYMPTOMS

The onset of the disease is usually sudden. Without warning the patient is seized with fever, which in the case of the horse may reach 104 to 106 degrees F. in a few hours. The patient is stupid, languid, and loses appetite. In some cases a pronounced chill ushers in the disease symptoms. The fever is of the continuous type, remaining up for seven to nine days, when it drops rapidly to normal, or on the third or fourth day may begin to gradually decline, reaching normal in four to eight days following. Cough is short, painful, and frequently restrained. At first it is dry, later moist in character. Nasal discharge is not always present, especially in continuously stabled horses. In some cases, during the second stage, a rusty brown ("prune juice") discharge occurs which may last only twenty-four to forty-eight hours. In the third stage a yellow-colored discharge may appear. The pulse at first is not much affected, but as the disease progresses, due to cloudy swelling of the heart, its frequency is increased to 60 or 80, or even higher. Quite often the pulse remains high after the fever has gone down. The respirations are accelerated early and the patient breathes with distended nostrils. The mucous membrane of the eye in severe cases often assumes a spotted mahogany color. The sounds (on pressure with the fingers) vary with the stage of the disease. In the earliest stage (congestion) there is little appreciable change; in the second stage a flat sound is emitted. The sound begins about the second day and is retained three to five days. During the third stage the sound becomes drum-like. The area of dullness is usually confined to the lower portion of one lung, its upper limits often describing an upward curved line. Upon listening, fine crackling sounds (like hair rubbed between the fingers) are heard in the first stage. These sounds are usually present for the first twenty-four hours, then pass away. In the second stage there is either no respiratory sound audible or tubular breath-

ing is heard. In the third stage moist rales are heard (the return rale). The general condition: Varies greatly with the case. In mild attacks the appetite may be retained and the mind little perturbed. In severe cases there is no appetite while the fever is on and the animal is very stupid and languid. Horses usually do not lie down until the fever drops. Small animals and even ponies lie down most of the time during the disease, and if only one lung is affected, on the diseased side. The urine is scanty and high colored until the fall of the fever, when its specific gravity drops, and the quantity, voided frequently, greatly increases.

DIAGNOSIS

Pneumonia may be distinguished from pleuritis by listening, and sounding with the finger. In cases complicated with pleuritis differentiation may be impossible. However, pleuritis is usually bilateral, the upper margin of the zone of dullness on percussion is horizontal and the resistance under the hammer pronounced. In pleuritis there is a further tendency for swelling to form in pendent parts of the body. Cough is usually absent in pleuritis; present in pneumonia. A test puncture of the thorax may be made in doubtful cases.

COMPLICATIONS

(1) Heart weakness due to cloudy swelling. The heart beat is fast, arhythmic, and palpitating. The pulse may be weak and runs about 76. The patient is weak, may be cyanotic, superficial veins distended.

(2) Pleuritis: A common complication, leading to effusion in the chest, displacement of the heart, characteristic difficulty in breathing. (See Pleuritis.)

(3) Gangrene of the lung: May develop during convalescence. The temperature again rises, the patient continues to lose flesh, and the expirium assumes a sweetish, fetid odor.

(4) Further but less common complications are: Nephritis (albumen in urine), jaundice (catarrh of duodendum), tendovaginitis (leg-swelling and lameness), founder (laminitis), cerebral and meningeal symptoms. Purpura hemorrhagica may occur during convalescence.

COURSE

The usual course is typical, ending in recovery in two weeks. In some cases, especially in old horses, cattle and swine, the course may be much shorter (larval or abortive type). Death may occur suddenly during convalescence from heart failure. If pleuritis complicates the pneumonia, the course is much prolonged. It may lead to death, or adhesions (lung to thoracic wall) may cause permanent dyspnea ("heaves").

Chronic induration of the lungs is a common termination following certain outbreaks. It is characterized by the continuation of the fever and dyspnea after the usual period of convalescence has passed. The patient is generally left short-winded. Roaring may sometimes follow an attack of fibrinous pneumonia. Pericarditis is a rarer complication.

The prognosis is good in typical and uncomplicated cases. The behavior of the heart is of importance during the attack. A continued high pulse is dangerous to the patient. The extent of the area involved has much to do with the outcome of the case. If confined only to the lower portion of one lung, the danger is not so great as when the upper part of the lung is also involved, or if both lungs are diseased. When pleuritis complicates the case the prognosis is naturally less favorable.

TREATMENT

The patient should be placed in a light, clean, and well ventilated place. If feasible, keep the case out-of-doors as much as possible, guarding it, of course, against wind and rain. Use only light covering (in horses). The legs may be bandaged (use Derby bandages with cotton underneath. Removing the handages once daily and rubbing the legs well before re-applying is helpful. The horse-patient should be groomed well each day. Feed any easily digested food which the patient can be coaxed to eat. Good clean oats over which a little sugar has been sprinkled is often tempting to the appetite. Give only small quantities at a time. Before feeding syringe out the mouth with clean water. If obtainable, fresh grass is very palatable and nutritious. A few handfuls over which is strewn a little salt is often eaten with avidity. The hay should be bright and free from dust. Feed about 6 pounds daily, divided into three feds. Roots (carrots, beets) and bran mashers are recommended (some horses do not like bran). Eggs and milk may be given if appetite is entirely gone. Keep pure water constantly

before the patient, and where it can be reached without undue exertion, rectal and artificial feeding may be resorted to in patients unable to swallow or without any appetite.

SURGICAL—Puncturing the thorax with a sterile trocar, and permitting the instrument to penetrate the inflamed lung, was practiced extensively in the army during the World War. The operation was performed irrespective of the existence of exudate in the chest cavity. The results seem to have been satisfactory enough to warrant further experiment. It appeared most beneficial in cases of delayed resolution.

DRUGS—In all forms of pneumonia it is best not to rely too much on drugs, especially large quantities and many varieties, such as are too often resorted to. It is very important to keep the bowels open. Give one to two tablespoonfuls of Bovolax in moist food or water twice or three times daily, as the case may require. To keep the heart strong two ounces of brandy may be given every two hours. The fever can be controlled by giving a teaspoonful of National Febris Powders in drinking water every three hours. In severe cases where breathing is difficult and painful, the chest should be rubbed freely with Electric Cream (National) twice daily. This will draw the inflammation to the exterior, thus relieving the inflamed lungs very materially.

ROARING

Roaring may be defined as an unsoundness characterized by difficulty in inhaling and cough due to paralysis of the left recurrent nerve. The condition is always chronic and can be relieved in about 80 per cent of the cases by operation.

From a practical standpoint recurrent paralysis may be classed as primary and secondary.

The causes of primary paralysis are not understood. It seems as if heredity plays a part, since stallions and mares which are roarers transmit the tendency to their progeny. The condition does not develop until about the fourth to sixth year. As a rule only the left side is affected, although exceptions are noted.

Secondary recurrent paralysis may be a sequel to influenza, strangles, and dourine, or it may follow an attack of forage poisoning, poisoning with lead, more rarely goitre or direct injury to the nerve itself.

SYMPTOMS

Usually in primary cases the disease comes on gradually. It is at first but slightly developed, the patient only emitting a noisy sound when exercising. As a rule, if the horse be at rest, no signs of the disorder are noticed. If the upper rings of the trachea be pinched, a prolonged, hoarse throat cough is heard. In many instances, however, cough is absent. It is sometimes possible to cause the patient to emit a peculiar grunt if it is struck a sudden, unexpected blow with the hand on the side of the chest. The principal symptom of roaring, however, is the audible laryngeal sound emitted during and increased by exercise. The quality of the sound suffers many modifications from a whistle to a pronounced roar, which in some animals can be heard a distance of several yards. Pressing the throat with the index finger increases the sound. In well developed cases sufficient exercise can produce interrupted breathing. By compressing the nostrils to one-half their normal dilation the sound is temporarily diminished. Generally the roaring sound ceases after five to ten minutes rest, but returns again during exercise. In mild cases it stops as soon as the animal is "pulled up" after a hard gallop.

DIAGNOSIS

The examination of the patient should be made under motion. The horse may be ridden, galloped on a long line, or led behind a buggy. In some mild cases the animal may suppress the sound by extending the head. To avoid this the head should be drawn in, the neck held well arched. The use of the laryngoscope is of great value in diagnosis.

The course of primary roaring is chronic. Due to the wasting away of the muscles of the vocal cords on the left side, the condition grows worse with time. Many roaring horses may be used for light, slow work, while others are practically worthless for service.

Some cases of secondary roaring (forage poisoning, laryngitis, strangles) recover spontaneously in four to six months. About 80 per cent can either be relieved or cured by surgical interference.

TREATMENT

The most successful treatment consists in the removal of the laryngeal sacculus of the affected side.

CHAPTER II.

Diseases of the Circulatory Organs

TRAUMATIC PERICARDITIS OF THE OX

An inflammation of the heart sac caused by foreign bodies. This is one of the most common sporadic diseases of the ox. With the possible exception of tuberculosis of the heart sac, it is the most common disease of the heart. It occurs not only among dairy cattle, but also beef cattle, especially on farms where hay baling is practiced, pieces of baling wire being picked up and swallowed.

The frequency with which foreign bodies (needles, wire, etc.) are found in the reticulum (second stomach), the close proximity of the reticulum to the pericardium (heart sac), and the marked contractions of the compartment of the stomach, are the most important factors in the termination of this common condition.

SYMPTOMS

In traumatic pericarditis of the ox, the heart symptoms are usually preceded by those of traumatic indigestion. Inquiry, therefore, should always be made into the past history of the patient in this regard. The cardinal symptoms are as follows: 1st. In the early stages stiffness and disinclination to move. The patient is forced to exercise, the abdominal type of respiration predominating. 2nd. The pulse is rapid and irregular. 3rd. A pronounced undulation of the jugulars is seen. 4th. Later edematous swellings appear under the throat, neck, brisket, and chest. 5th. Percussion is usually painful, the animal wincing and grunting when the chest is struck over the heart region. An increased area of cardiac dullness may be determined in cattle if not too fat. 6th. On auscultation, provided no fusion has taken place, a friction tone like that heard in pleuritis, but occurring with the heart beat, is heard. If the heart sac is filled with fluid and gas, metallic tinkling tones modify the normal heart sounds, which are muffled and distant. 7th. The patient usually shows rise in temperature, but the fever is generally mild. Not infrequently the clinical symptoms of traumatic pericarditis are entirely overlooked, the first intimation of any trouble appearing when the patient drops over dead. The gen-

eral condition of the patient, due to the loss of appetite and attending infection or intoxication grows bad. The patient emaciates, becomes anemic, weak, and may suffer from diarrhea.

The course in traumatic pericarditis is usually a prolonged one, the condition lasting often several weeks or even months. Exacerbations and remissions are very common. As a general rule, however, there is a slow but steady decline. The disease may assume the form of a pyemia (pus absorption) leading to enlargement of the joints, lameness, etc. Pneumonia and pleurisy and gastrointestinal catarrh are frequent complications. Death may occur at any time during the disease from the foreign body penetrating the heart muscle or from injury to the coronary blood vessels, causing fatal hemorrhage. The patient may also die from the attending sapremia. Occasionally cases occur in which great improvement in the condition is noted, the patient gaining in flesh, appetite and strength. Usually, however, the improvement is only temporary. Rarer still are those instances where a spontaneous recovery follows the escape of the foreign body through an abscess to the outside world.

HOW THE DISEASE IS RECOGNIZED

While in typical and advanced cases the diagnosis is easy, traumatic pericarditis in the earlier stage may be exceedingly difficult to recognize. Eber recommends, where the condition is suspected and fever exists, to give acetanilid (3 ounces) daily. This reduces the temperature but not the pulse, which remains high (100 to 120) if pericarditis is present. In doubtful cases an explorative puncture of the pericardium will determine the presence of fluid.

TREATMENT

As nearly all cases are fatal, the immediate slaughter of the animal is recommended. In very valuable pregnant animals an effort to prolong life may be made by the use of such drugs as digitalis ($\frac{1}{2}$ ounce); caffeine (1 dram), or oil camphor (1 ounce) subcutaneously. Stimulants (alcohol and ether) are also in order. In Europe puncturing the pericardium with a trocar has been employed.

AZOTURIA

(Often mistaken for inflammation and congestion of the kidneys)

Azoturia is purely a blood disease of a plethoric or hypernutritious nature. In other words, the blood is overloaded with nutrition, bringing about the unnatural conditions and strange actions of the horse after he has gone a mile or two from home in the best of spirits. The blood in this condition is naturally thicker and slow to return to the heart, which is very active. This tardy return flow causes a dilation of the return blood vessels, most of which lie close to the main nerve trunks. As the vessels expand, the nerve trunks receive extra pressure, which partially, if not entirely, shuts off the impulse and brings about either partial or complete paralysis of the parts involved. These are usually the hind quarters, due to the fact that they are further away from the heart. You will also notice a marked swelling of the muscles involved; as they become very hard and sensitive. The kidneys, in an endeavor to assist nature, will absorb some of the blood from these congested regions, which naturally turns the urine to a dirty red or brown color and causes the layman to believe that the kidneys are at fault.

SYMPTOMS

This trouble usually follows a period of enforced idleness with a good appetite and rich food. As soon as you notice that the horse begins to lag behind and perspire, you should take a warning that something is wrong. You will next notice him knuckle over in one of his pastern joints. Finally, it attacks both hind quarters, although on rare occasions you may find it in the front quarters.

TREATMENT

The horse should be stopped and brought to the nearest barn, where he should be warmly blanketed after the swollen muscles have been thoroughly rubbed with National Electric Cream to keep the blood moving and stimulate the nerve endings to again become active and continue so. The horse should at once be given two ounces of neutrogen in about eight ounces of water. This may be repeated in two hours, when the external application should be repeated. Absolute rest is necessary. Do not attempt to drive

the horse before six or eight hours or he may suffer a relapse, which very often proves fatal. The above treatment brings quick relief and may be repeated until the animal is able to pursue its journey. Then give a teaspoonful of Sangnitone Compound in moist food three times daily to get the blood in natural condition and prevent a re-attack.

BLOOD TROUBLE

This disease usually makes its presence known by the appearance of pimples, scabs, blotches and eruptions of the skin of horses, cattle and all domestic animals. These eruptions are due to a humor in the blood and must be reached through the circulation. Give a teaspoonful of National Sanguitone Compound in moist food twice or three times daily. This may be followed after a week or two with a tablespoonful of Fowler's solution of arsenic given twice daily. Usually the latter is not necessary as the Sanguitone Compound acts very promptly.

NAVEL DISEASE (Of Colts and Calves)

Newly born colts and calves are often affected with swollen and infected navels. The infection usually takes place shortly after birth. The newcomer comes in contact with unclean substances in the stall, which are easily absorbed through the navel cord and bring about a sensitive swelling and, in some cases, suppuration. It is not uncommon for a colt to become swollen in one or more of its joints and show abscesses in any part of the body after such an infection.

TREATMENT

Prevention is better than cure. When a colt or calf is born the navel cord should be disinfected with a solution of Lotio-Vita, which is especially adapted for this purpose. This should invariably be done as a precaution whether or not you expect infection. If the disease has become prevalent in your barn, you should vaccinate the newly born as soon as possible after it is dropped with Polyvalent Bactrins. The latter often prove beneficial as a curative after infection has taken place.

CHAPTER III.

Diseases Common to the Digestive Organs

FEEDING SICK ANIMALS

It must be borne in mind that food or drink should not be forced on sick stock; that what food is presented should be tempting. To be so it must be fresh, all traces of the last offering having been removed; in fact, if an animal does not clean up its allowance within a reasonable time, the materials should be removed so as to avoid tainting the feed box. The same rule applies to the drinking water.

Laxative food is indicated in sickness, with few exceptions; in fact, those cases laid up on account of wounds need laxative food and a reduction in quantity. Variety counts for a great deal with the sick animal. For such purposes boiled food, bran mash, grass, carrots, potatoes, small green wheat, oats, corn, etc., may be used in limited quantities. Milk and eggs are also of value, but will have to be given in a drench as a rule. The BRAN MASH should be made as follows: Scald a pail, throw out the water, put in a gallon of bran and a tablespoonful of salt, add two to three pints of boiling water, depending on the consistency desired, mix well, and cover up for 15 minutes, when it may be placed before the patient. A tablespoonful or two of powdered ginger added to a bran mash makes a nice feed for a tired or over-driven horse, and should be given before oats are offered. Horses will rarely burn themselves; they do not care for sloppy mashes. To make linseed (flaxseed) tea take one pound of the seed and boil in four to six quarts of water until the grains are soft. The linseed tea and bran may be combined with benefit. Hay tea—run good hay through the cutting box and half fill a pail with it, then fill up with boiling water, let stand until cold and give the clear fluid. Raw linseed oil is often given in the feed in quantities of from one-quarter to one-half pint daily; it is very valuable in "Heaves," and puts a gloss on the hide, besides acting mildly on the bowels.

DISEASE DUE TO MISTAKES IN FEEDING

DISTENTION OF THE PAUNCH. Bumen occurs in sheep and cattle due to getting an overfeed, say from getting loose at grain, either in the barn or the field, dry fodder and no succulent feed (such as roots or silage), from stoppage of the bowel movement. The symptoms are similar to those shown in bloating, only that the swelling pits on pressure (on the left side) and tapping with the fingers does not give the drum-like sound as heard in the preceding disease; chewing the cud (rumination) stops and the animal is said to have lost its cud. Here again we have a symptom mistaken for a disease, if digestion is going on properly the cud (so-called) will be present, so that the loss of the cud as termed by many people, is a symptom of digestive trouble and needs investigation as to the cause, **not** the giving of a so-called cud, of pork, greased rags or unwholesome materials; if this condition has existed for a day or so, no feces (dung) will be seen to pass.

TREATMENT

Dissolve one pound of Bovolax in a gallon of warm water. When cooled down to about 70 degrees F. give a quart to a full grown cow or ox every six hours until the entire gallon (4 quarts) has been given. If the patient is not relieved, a quart of raw linseed oil may be given at the next six hour period. Gentle pressure and hand rubbing over the region of the paunch may be applied twice or three times daily for ten or fifteen minutes at a time. In very stubborn cases the above may be repeated, but it is rarely necessary. These doses are for adult cows or oxen. Smaller animals should have doses reduced according to size and age.

FOUNDER (laminitis) is included under diseases due to errors in feeding, although it frequently occurs from driving on hard, dry roads, excessive purging, sudden checking of sweating by giving very cold water when heated; hard work when not in condition, or it may follow foaling or lung troubles, and occasionally from standing too much on a limb in order to save another which may be injured. *Excessive* feeding for the showring or block, etc., *with lack of exercise*; wheat, especially when green, or breaking loose and getting at grain in the bin are other common causes. This disease may appear in cattle and sheep, although the pain shown will not be as acute as in horses. The symptoms of laminitis are so well marked that once seen they are never forgotten. A horse

affected will stand immovable in a stall with his forefeet away in front of him, his weight being thrown on the heels. If the hindfeet are affected, they and the forefeet are placed well under the body; the animal if made to move rocks on its limbs and will jump with both forefeet together. The pulse is hurried; the throbbing of the arteries below the fetlocks can be felt. If an attempt to lift the foot is made, the animal resists; the feet are hot and tender, especially if tapped with a hammer; the breathing is hurried, giving rise to the suspicion that the lungs are affected; the pulse is full and hard, and the membrane of the eye reddened (congested). Sweating will be seen as a result of the extreme pain and thirst will be great; the thermometer will show an increased body temperature.

TREATMENT

The treatment needs to be energetic, for unless it is so, destructive changes will take place, resulting in dropping of the sole, due to the pedal bone turning point downwards, (pumic foot) and possibly shedding of the entire hoof. Irregular rings around the foot, close together, are evidences of an attack at some time, as is also the tendency of a horse to travel on its heels when trotted. Tub the feet in warm water or apply hot poultices for a few times. Then apply Elk's Dessianc over the coronet just above the hoof, once a day for three days. Purgatives such as aloes should not be given; a quart of linseed oil will be useful and safe to use. In these cases, give a tablespoonful of saltpetre (nitrate of potash) twice daily in the drinking water until the fever subsides. Bran mashes or other light food are to be preferred. Some veterinarians remove the shoes, which is not always easy unless the animal is made to lie down (this should be done if it persists in standing). Do not pare through the sole, but as soon as the worst symptoms are over (in three or four days), give moderate exercise, a run at pasture, a moist one preferable. After this, blistering the coronets is a great help to restore the foundered animal to usefulness. This disease in sheep or cattle will be more common during the summer, if high feeding, without taking into consideration the temperature, or putting on full feed too suddenly is persisted in. More is to be gained by prevention than by cure. If such animals are affected, doses of glauber salts are to be given occasionally, the doses being the same as of epsom salts.

LYMPHANGITIS, big leg, weed, or water-farcy (not a good term, apt to be mistaken for farcy), is another serious trouble due

to errors in feeding. The lymph channels and nodes are inflamed, consequently their working is more or less hindered. Causes are over-feeding, lack of exercise, or sudden change to large quantities of new food, etc. It might be considered a disease in which the lymph has stagnated (stopped moving) in the lymph vessels. These vessels, it will be remembered, act especially as carriers of waste material from various parts, hence this stagnated material acts as a foreign object with the result—inflammation of the organs affected. There is excessive swelling of one or more limbs, usually a hind one, the swelling extending from top to bottom of the limb, which is hot and painful to the touch; the swelling will pith on pressure; running the hand down the inside of the limb the lymph nodes are felt; the temperature is above normal; there is great lameness, rapid breathing, hard full pulse and the lymphatics are seen to be enlarged; owing to the cause, lack of exercise, it is oftenest seen on Monday morning, hence it has been termed Monday morning fever. Attention to the diet—bran mashes every Saturday night containing a tablespoonful of salt petre—will almost certainly prevent the disease. A horse once attacked is liable to have the trouble recur and as a consequence, there will be a chronic enlargement and thickening of the limb (elephantiasis). This disease must not be confounded with ordinary stocking up of the limbs, which is painless, or with the local form of glanders, termed farcy, a very dangerous disease, both to man and animal.

TREATMENT

The treatment should be directed towards the cause and its effect; therefore, limit the feed, give a purgative (Bovolax, preferably) to remove the accumulated waste products, which have, in the form of lymph, escaped more or less into the tissues, and, if left there, may coagulate and thus give the chronic thickening so often a result of this disease. Bathe the limb with warm water, thus relieving the tension and pain; hand rub and bandage the limb when the inflammation is subsiding, and if the swelling is slow to depart, you may apply Elk's Absorbing Ointment to the swollen parts once or twice a week.

HEAVES, or BROKEN WIND, is a chronic condition in which there is difficulty of breathing (the act of expelling air from the lungs taking longer than the act of breathing in air). **It is due originally to mistakes in feeding,** and an animal badly affected is rendered almost incapable of work.

The difficulty of breathing in this disease is due to a dilated condition of the lungs, the result of an excess of air in the air sacs or in the tissue that surrounds the lobules. As a result, the lungs are prevented from expelling all the air they should, hence less is taken in than would be if they were in a natural condition. The air cells may be broken into one another as a result of the violent coughing, whereas in the other form the air seems to enter the tissues during the intake of air into the lungs, in which case some degeneration has in all probability taken place in the lung tissue. *A full stomach and bowels interfere greatly with the action of the lungs*, and when filled out with food it is not surprising that this trouble occurs. At the commencement of the disease there is a spasmodic cough, later a suppressed short weak cough, with a double expiration, and the passage of wind by the anus. In ordinary breathing no aid is needed to expel the air; the natural elasticity of the lungs performs the work. In this disease the muscles of the abdomen are used, as is noticed by the heaving of the flanks.

While the causes of the previous troubles have been overloading the system, the cause of this trouble is more mechanical in its nature and may, owing to the feed that causes it, be a disease of the poor feeder's horse, FOUNDER (BIG LEG), etc., being diseases of the horses belonging to the heavy feeder. The custom, existing among so many farmers, of *continually filling a horse's manger with hay*, even having them littered with it, *is one of the great causes of this disease*, especially is this so when the hay is of poor quality, hard and innutritious, the horse being given an extra quantity to make up for the deficient quality. Hard chopped straw, overripe rye grass, are all liable to cause this incurable disease, being irritating in their effect on the stomach wall and delicate filaments of the tenth nerve, the nerve which controls the lung movement—thus the relation of feeding to this disease is at once more readily seen and understood.

Heredity may also be said to have an influence on the frequency with which this trouble shows in a breeding stud. Although treatment is only palliative, it should none the less be adopted, such as feeding roots and grass, or some soiling crop in place of dry hay. Limit the feed and water, and let what is given be of the best quality, clean oats and hay free from dust; sprinkle the hay with water before feeding. In France the hay is dampened with molasses and water with good results. The feeding of boiled flax-seed or four to six ounces of linseed oil daily are very useful and serve to keep the bowels and skin in good order. Clover hay is very unsuitable; clean, bright timothy is preferable. In mild cases improvement is

frequently noticed when horses are taken from the East to the Western prairies.

Horses affected with heaves must be fed hay and bulky fodder very sparingly, say about two or three pounds a day. Rather increase the grain ration in order to decrease the distension of the abdomen. By so doing you will give the lungs more breathing space and their functional activity can more easily be increased. Then give a teaspoonful of National Emphysema Powders on food three times daily for at least ten days. Rest for a week and repeat until the animal shows no more signs of heaves. By no means allow the animal to fill up to its utmost capacity on hay, fodder, straw or grass while attempting to relieve or cure heaves. National Emphysema Powders is a new, but the most reliable, remedy for this ailment.

CHOKING in cattle is usually due to the attempt to swallow whole potatoes, pieces of turnip, old shoes, etc.; in horses from bolting the feed, such as whole oats, or from hard physic balls, pieces of roots, pressure by the collar, or the formation of abscesses in colt distemper (Strangles). In cattle, there is a flow of saliva from the mouth, attempts to cough, bloating, and the presence of the obstruction somewhere along the course of the gullet indicate the trouble; in horses the nose is poked out, the neck is stiff, if attempts to drink are made the fluid is discharged through the nostrils, there is slavering, an anxious expression, difficult breathing; the horse may drop to the ground.

TREATMENT

The treatment in cattle is comparatively simple and successful; the bloating is first relieved by tapping, an oiled probang or whip stock is passed down the gullet and endeavor made to push the obstacle on down. A little oil poured down occasionally, or before the use of the probang, is also useful. An assistant may also gently try to work the obstruction downward if seen; do not use a whip-stock unless very flexible or a torn gullet and death may result. A rubber garden hose attached to a force pump and forcing a little water gently will dilate the oesophagus and tend to remove the obstruction.

DROPPING WADS OF HAY

When a horse drops wads of hay while eating it is a sure sign of broken or defective teeth. Usually he will salivate considerably while eating, besides dropping the food. These conditions are most common the season of the year when farm horses have a good appetite and are eager to eat and unfortunately bite on a piece of metal or stone in the oats or other grain, thereby splitting or breaking one or more of the teeth. In most cases the broken piece does not come off immediately, but remains on either side of the process, only to cut the tongue or delicate membranes of the mouth; or, if the tooth is split in two, the food is pressed between the split surfaces, which spreads the two pieces apart, thus causing the food to become lodged there permanently and decompose. This causes an offensive smell and is very painful to the animal, thus interfering with mastication and bringing about the above mentioned conditions.

TREATMENT

Have the fractured particles of teeth removed and the teeth floated. This usually affords immediate relief. It is good practice to have a horse's mouth looked over once a year. They feel a tooth-ache as keenly as you do, but cannot make their troubles known, nor are they able to help themselves. Acute indigestion, colics, and general unthriftiness are often the result of faulty teeth.

DISEASES OF THE TEETH

The stockman is seldom worried with TOOTH TROUBLES in sheep, cattle, and pigs, and, unless well informed, is apt to think horses are just as free. Such, however, is not the case. The slightest irregularity of the teeth will interfere more or less with chewing and masticating the food, quite readily understood if a person is familiar with the arrangement of the teeth. NO HORSE IS EX-EMPT. From colthood to old age the teeth are liable to need attention. There are general symptoms, such as unthriftiness, (often in spite of good and liberal feeding and little work) there is dribbling of saliva from the mouth, (ends of hay may be dropped from the mouth, water is let fall out when drinking, the horse may crib or windsuck, the feces may contain undigested feed) there may be swelling of the jaw, a partial refusal of food, loss of flesh; the animal may pull on the bit or refuse to take hold at all, and there may be swelling of the gums just behind the upper front teeth. If this

symptom—not a disease, remember—is seen, the word “Lampas” is uttered and the cause of the trouble thought to be located; the swollen gums are perhaps torn with nails or burned with hot irons, but there is no improvement. To the well informed the cause is soon known—it is the teeth. Here the *veterinarian* with the proper instruments is *indispensable*. The employment of a quack, a traveling (so-called) horse dentist, or the attempt to treat the condition by the owner or groom will be *unsatisfactory*, being cruel and worrying to the horse, even to the extent of spoiling his mouth for life. Everyone knows that the efforts of the expert human dentist are directed to preserve the teeth, not to insert false ones, even more important is this effort in the horse, false teeth in him not being practicable; a horse’s usefulness, and therefore his life, depends as much on his teeth, or more so, than on any organ of the body, and while horse buyers only examine the front teeth to determine the age, the well-posted person will want to know the condition of the grinders, and whether any are absent or diseased. The yearly examination of the horse’s mouth by the veterinarian is one of the *most profitable* investments that can be made by an owner, as feed, flesh and the required power to do the work will be saved. The period of teething, it will be remembered, extends almost from birth until the horse is five years old, consequently, the colt is *just as liable* to have tooth troubles as is an old horse. The milk (Temporary) molars or crowns, as they are termed, are often retained instead of being shed at the proper time, especially during the age of two to four years. The symptoms already mentioned are present and the lining of the mouth may show a sore surface, the gums even bleeding, as oftentimes a crown becomes partially loose, and its

sharp and jagged edge will be pressed upon the gums during attempts to feed; the treatment is removal of those crowns, the smoothing of any sharp edges, soft feed, and in a few weeks the improvement is almost beyond belief.

WOLF TEETH are evidences of evolution in the horse. Showing his relation to the tapir and other animals, the reasons advanced for their removal, namely, danger to the eyes, is not tenable, as the eyes are never directly affected by them. They are usually removed as a matter of policy, by the veterinarian; they might, if very large, interfere with the bit; as the wolf tooth has a fang; it should be pulled, not knocked out, if its removal is decided upon. The commonest trouble that the veterinarian is called upon to treat in horse dentistry is the presence of projections of the grinders, and such projections causing sore mouths, slavering, the passage of undigested food in the feces, unthriftiness, (sometimes very marked)

indigestion, wounds of the tongue and lining of the mouth, side pulling on the bit, the manger often being covered with saliva.

TREATMENT

The treatment is simple, calling as it does for the use of the float (dental file) and yet is *not simple enough* to warrant the *trusting of this work to the traveling quack or the majority of owners*. The veterinarian should be employed and after the removal of the projections soft feed should be given for a few days. The average work horse will need this attention once a year.



Excessive salivation (Due to faulty or irregular teeth).

DECAYED TEETH often cause symptoms in horses which have in the past been mistaken for Glanders, Nasal Gleet. Such symptoms as a stinking breath, together with a stinking discharge from one nostril, quidding of the food, pain during chewing, (shown by the animal suddenly stopping that act often to let some of the food fall from the mouth) holding the head to one side when drinking, loss of condition and perhaps a swelling of the jaw, or fistula of that bone. The only successful treatment is removal.

CRIBBING AND WINDSUCKING are two diseases due to idleness, or the habit may have started in the colt during teething. It is a very unpleasant vice and affects the condition of a horse more or less due to its detriment. The application of a neck-strap when in the stable and plenty of work are so far the most satisfactory measures to adopt. These vices are considered as **UNSOUNDNESSES** in horses, therefore, in the examination of a horse the edges of the front teeth should be looked at to see if those edges are worn or chipped, the impress of the neck-strap upon the hair may sometimes be detected, and the prospective buyer will draw conclusions accordingly.

DISCHARGES FROM THE NOSTRILS are of common occurrence, some are quite serious in their import, others not so much so; briefly we may class them as follows:

1. If chronic and no smell, yellowish or greenish in color, sticky and from one nostril, often the left, suspect glanders.
2. If chronic and from one nostril, the discharge being of a stinking nature, suspect a decayed tooth.
3. If chronic from both nostrils, white, glossy, flaky, not sticky, more abundant during mastication, the discharge is likely from the guttural pouches.
4. If chronic, becoming of the nature of pus, and stinking, catarrh, the bones of the head being affected.

ACUTE DISCHARGES are seen in common colds, inflammation of the larynx, bronchitis, pneumonia and lung gangrene (rotting).

FAULTY AND IRREGULAR TEETH

Animals, like man, are subject to irregular, decayed or broken teeth. Of all the lower animals, the horse appears to have the most trouble in this connection, due probably to the fact that it feeds more on whole grain, especially oats. Oats is liable to contain small stones and pieces of nails and bolts, such as often get into the oats while threshing or cleaning. When the animal, in its eagerness while hungry bites into these hard objects, it is liable to break or split one or more teeth, thus causing acute sensitiveness, excessive salivation, and inability to properly masticate the food thereafter, besides starting favorable openings for decomposition of the teeth, in which particles of food substances may lodge and decompose.

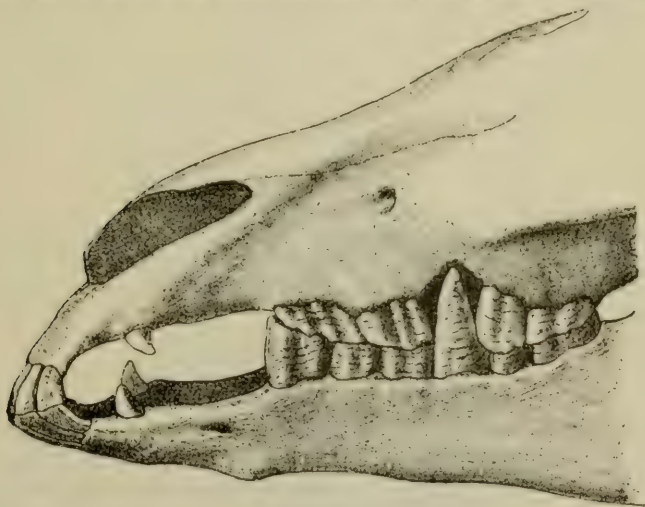


PLATE 3

Lower third molar growing into cavity where upper corresponding molar is missing.

If decay works deeply into a split tooth, it is liable to cause stubborn fistulas of the jaw, attended with a discharge of an offensive odor from the nostrils, which invariably indicates decay of bone. When a tooth is broken off, the corresponding tooth in the opposite jaw upon which it is supposed to grind, will begin to grow into the cavity. (See Plate 3.) In these cases there may be a sharp projection an inch or more in length. If this is the case the animal will cud its hay and spit it out.

SYMPTOMS

When an animal shows an excessive flow of saliva from the mouth, and, showing a willingness to eat, grabs the food eagerly and suddenly drops it or holds its head to one side as if in pain after drinking cold water, you may be assured that there is something wrong with the teeth which might have caused wounds in the mouth.

All irregularities and decomposition of teeth interfere with the proper mastication of food and lead to indigestion. This very often terminates in colic, bloating, inflammation of the bowels, worms, unthriftiness, and various organic troubles. Besides, it causes an enormous waste of food. Under these conditions a horse may easily waste from 10c to 25c worth of digestible food per day. Let us take 15c per day for example: In 365 days you would lose \$54.75 in food alone, to say nothing about the amount of service you lose during this time on account of ill-health and lack of spirit and energy, which naturally follow these conditions.

TREATMENT

To avoid all this, the owner should have his horse's teeth examined at least once a year or oftener. The horse cannot tell you when it has a toothache, but you may feel assured that the faithful animal feels it just as keenly as you do.

RESTRAINT

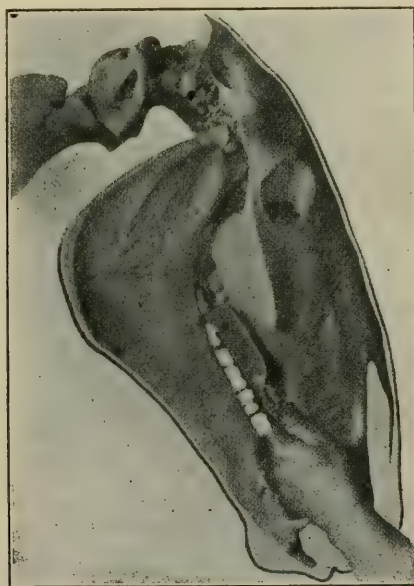
Floating, filing, and trimming the teeth of horses can be accomplished without provoking resistance enough to demand any forcible means of restraint. The minor dental operations are accepted with remarkable complacency by the great majority of horses. The only necessary restraint is to prevent the horse from backing away from the operator and from elevating the muzzle out of reach of the hands and instruments. This is done by backing the horse into a single stall and securing the head at a comfortable height on the pillar reins with the DENTAL HALTER. The ordinary leather halter is not satisfactory for this purpose because one side or the other will press against the cheek and prevent the free passage of instruments along the teeth.

The dental halter consists of a leather-covered iron loop fifteen inches long and nine inches wide with a single poll strop and a ring on each side for the tie ropes. The poll strap is of two-inch heavy

leather with numerous buckle-holes to make it adjustable to any sized head. The tie ropes are ordinary half inch hemp, long enough to encircle the pillar or to reach the pillars of a stall of any ordinary width. Whenever the tie ropes, owing to the construction of the stall, cannot be tied low enough on the pillars to hold the head down to the proper height, a third rope or strap is tied to the lower end of the halter, passing between the fore legs around the withers and back again between the fore legs to the halter. By this addition a horse can be secured in an open room, field, or box stall with only the assistance of one person to steady the head.

In the absence of the dental halter, dental operations should be performed with the aid of an assistant, holding the head with one hand on the poll and the other over the nasal bridge.

The operator takes his place directly in front of the horse,



Floating the molars.

placing his left hand over the bridge of the horse's nose to help steady the head and draw the patient's attention. The right hand is then passed into the mouth through the dental space of the left side of the patient's mouth, pressing its tongue from the right to

and between the left molars, whereby he can easily explore every molar on the right side of the mouth with his middle finger. To explore the left molars use the left hand in the same manner from the opposite side.

If any broken or decayed teeth are found, they should be removed at once. If the teeth are irregular they should be trimmed down and properly floated. After this the condition of the animal can be quickly built up by feeding a tablespoonful of National Alterative Powders. This corrects all disorders of the digestive organs thus brought about, kills the worms, and builds up the rundown system.

CALF SCOURS

Scours in calves is the cause of loss of a large percent of our best bred, new-born members of the herd. It is due to either one of two causes.

First, the mother's milk may be too rich for the delicate stomach of the little calf, or possibly she has been milked several days or a week before calving, thus depriving the calf of the colostrum, or first milk, which belongs to the calf. If this is the case, the calf should be given a tablespoonful of castor oil as soon as the trouble is noticed. Then follow with a teaspoonful of Elk's Anti-Scour Powders in the mother's milk, diluted one-half with warm water three times daily.

Second, the calf may have contagious or infectious scours, which affects every newly-born calf in the barn. This can be prevented by giving a hypodermic injection of bactrins just as soon after birth as possible.

LOSS OF APPETITE

Loss of appetite usually indicates a derangement of the digestive organs. It accompanies almost all organic ailments. In order to prescribe an effective remedy for the same, we must first of all ascertain the cause and remove it. When the cause has been removed, we must assist nature to repair the unnatural condition thus brought about. To do this an effective alterative is indicated. There is nothing better than a teaspoonful of National Alterative Powders in moist food three times daily.

COLIC IN HORSES

The term colic pertains to disorders of the colon (or large bowel) of the horse, to any disorders of the stomach or digestive organs. The most frequent causes of colic are acute indigestion, change of food, hay partly cured, new thrashed oats eaten while in a sweat, wilted corn fodder, musty grain or silages, frozen grass or roots, and watering after a heavy meal, especially when the horse has been deprived of the same for some time.

TREATMENT

Give one or two tablespoonfuls of National Specific for Colic and Urinary Troubles in twice as much water. If the case is very severe, you may repeat in one hour. One dose almost invariably suffices and gives prompt relief. This specific contains appropriate anodynes to relieve the pain, carminatives to limit the gases, and anti-ferments to prevent them from re-occurring, besides having sufficient laxative and stimulating qualities not to interfere with the action of the bowels. It relaxes the muscles of the bladder and allows the urine to flow freely. It is not expensive, is very effective, and is especially valuable in case of emergency.

ACUTE INDIGESTION (Often termed Colic)

A common disorder of the digestive organs due to overloading the stomach or stomachs, the taking of mouldy, frozen, or unwholesome food, eating hastily, without properly chewing the food, faulty and irregular teeth, or feeding while warm and fatigued from exhaustive work, or watering while warm.

TREATMENT

Dissolve one ounce of National Specific for Colic and Urinary Troubles in three ounces of water and give as a drench or with a syringe. Within ten or fifteen minutes you will usually notice the passing of natural gases from the rectum, which is almost invariably followed by natural urination. These are sure signs of an early recovery. If not relieved in one-half hour repeat this dose. It is rarely necessary to give more than one dose unless you have complications with other diseases.

INTESTINAL CALCULI



Each Calculus contains a three-cornered glazing tin for its nucleus.

Intestinal Calculi are lime stones in bowels formed by the animal swallowing foreign substances, such as nails, tacks, or pieces of metal. While in the alimentary tract the lime contained in the food and water adhere to the foreign bodies and form these lime stones, as lime has a special affinity for metal, the metal nucleus is the most common, although other substances may be found in a calculus, such as balls of hair swallowed when animals lick each other.

The above cut shows a number of calculi weighing 3 pounds and 8 ounces found in the large bowels of a horse eighteen months after the horse had swallowed a package of window glazing tacks. Each one of these stones contains for its nucleus one of these tacks. The animal died of a sunstroke and on post mortem examination the bunch of calculi was discovered.

When an animal craves for such foreign substances, it is an indication of indigestion. The stomach usually is sour and the patient craves for alkalis. In such cases give a full dose of Bovolax, one pound for a horse or cow, dissolved in a quart of warm water. This will tend to remove the cause. Then follow with charcoal or

Neutrogen in tablespoonful doses twice daily in moist food to neutralize the secretions of the stomach.

It is difficult to determine whether or not an animal carries a calculus unless it becomes large enough to be felt in the abdomen. A calculus might grow to the size of a man's head. Then they become dangerous, as when they become dislodged they might cause a complete obstruction of the bowel which might result in death. The smaller calculi are often dislodged and passed out without being noticed and usually are harmless. A large dose of physic, such as aloes or Bovolax, will often cause their expulsion.

PREVENT DISEASE BY FEEDING FOR HEALTH AND PROFIT

It is not a question of how much of a well balanced ration an animal can eat, but how much of it is properly digested.

The importance of assisting the digestive organs to perform their natural functions and thereby to increase the nutritive value of animal food intelligently, while the animal is in the state of domestication, has been sadly neglected in the past, but is now deemed an absolute necessity. The successful feeder watches every meal the animal eats and also watches the effect it has on the animal. It is only human for an owner to be selfish, or greedy, for the sake of making an animal produce as much milk, beef, pork, veal, mutton, etc., as possible in as short a time as possible, to go just a little too far and overcrowd the digestive organs. In this attempt the animal gets a set-back for three or four days and possibly so many weeks, or is liable to be out of sorts for some time thereafter, simply because the digestive organs have been overtaxed and weakened and you did not make good what you had wronged in your selfish attempt for gain. This means a loss of time and money as well as discomfort to the animal.

For instance, you have a cow which you wish to push to the front to make a high milk record while she is being stable feed; you think you are doing your duty when you water and feed her at proper hours and gradually increase her grain ration as long as she will eat it up clean. But all at once she will refuse her feed, will rapidly let up on her flow of milk, show a swollen quarter or two, give curded milk, or at times only a small amount of amber colored fluid from one or more teats, and the feces will have an offensive

sour odor. All of these are signs of faulty digestion due to over-taxing the digestive organs and lack of proper assistance to these organs while put to this severe test.

You will notice that such conditions are rarely found when the cow is at liberty in the pasture where she has access to the advantages of nature. Many of us have seen a cow or horse paw a hole into the ground and eat clay, chew old bones, pieces of rusty iron or even eat dry wood, etc. When they do this they are doing it for a purpose and usually the purpose is to neutralize the secretions of the digestive organs, which have been deranged for some reason or other. But while confined to the stable, she is deprived of all these advantages and is dependent entirely upon you. Naturally you give her hay, grain, water, and possibly some ensilage, you prepare your ration to suit your own convenience, but pay too little attention to the natural wants of the cow, and the same plan is carried out during the entire season. You deprived her of the advantages of nature and it now becomes your duty to study out a plan by which you can substitute something artificially in place of those things which you are not furnishing her, but is demanded by nature. If you will take the trouble to do this, your cow, horse, sheep, or hog, whatever it may be, will surely thrive better and yield more profit for the amount of food consumed.

If a man were confined like animals are, he would not thrive so well either. We may feel like eating beefsteak with onions for a while, but if we were to get it three times a day with the same side dish and dessert, we would soon call for a change, no matter how near a proper ration this would figure out to be. When eating our meats, which correspond to the grain in an herbivorous animal's ration, we spice it to aid its digestibility, and we add such spices as are best adapted for the kind of food we take. We take care that all our vital organs are properly toned so that they may perform their natural functions, by taking such food as we desire and which answers nature's demand for the system, but we forget that an animal under domestication should have like privileges, in order to thrive best.

The writer hereof was born and raised on a farm, has practiced veterinary medicine for twenty-seven years in a dairy and stock raising community where one cannot help but observe a necessity which must in the future find more sympathy for the dumb animal in the hearts and minds of mankind for the mutual benefit of both. It appears that we can supply this call of nature with a little careful observation and study of the actual needs of the animal's

body, as well as we can figure out a proper food ration. If we feed for profit, we must also feed for health, and as an animal cannot very well be profitable unless it is healthy, the two must go together.

If an animal refuses its usual food ration, we at once conclude there is something wrong with the digestive organs. This is not all, for if one of the vital organs of the body is out of order the rest must suffer in sympathy, as in a state of perfect health all the vital organs must work in harmony with each other. In looking for the cause of the trouble you must conclude that it is due to an error in feeding and hasten to remove the cause before it becomes chronic and causes a lot of unnecessary waste of time, food and energy. We then must hasten to repair the damage which has been done by this little error, by administering stimulating agents to the organs affected to bring them back to their natural condition and enable them to perform their natural functions.

One of the first symptoms of a deranged condition of the organs of digestion is a sour smell from the mouth and also from the feces. This is an indication of an excessive acidity. This acidity can easily be eliminated and avoided by adding to the food ration enough of a simple alkali which favors digestion and avoids the trouble in the first place. We next notice that the liver, lymphatics, kidneys and other organs become inactive and lack tone; this we eliminate by adding simple, natural alteratives and dieterics, such as really belong in the food ration and are demanded by nature. We also can tone the nervous system and the process of digestion by adding natural stomachics and tonics in the same proportions as the animal gets under natural conditions. By carefully studying the natural conditions required to make an animal healthy and profitable and comparing them with the conditions existing when the animal is under domestication, one must conclude that the deficiency which we all admit can easily be figured out if you are familiar with the requirements of the animal body.

The writer believes he has figured out the proper formula to meet all the demands of nature in such a form that every farmer can prepare his own stock food or stock tonic, so that he will receive more benefit out of a given amount of food the year round and keep the animal in its proper health than can be obtained under the ordinary practice of feeding. By adding this formula to the daily food ration in proper proportions, you place the animal under domestication on a level with the one that is allowed its natural freedom in the rich meadow or pasture. Its blood is kept in exactly the same condition and is supplied with all the demands of nature.

FORMULA

Old Process Oil Meal	85 lbs.
Common Salt	10 lbs.
National Sanguitone Compound.....	5 lbs.
	<hr/>
	100 lbs.

DIRECTIONS:

Mix well and give one tablespoonful in food twice daily to adult horses or cattle, smaller animals take less according to size and age.

This compound is the natural substitute for fresh grass. Sanguitone can now be obtained in any up-to-date drug store. If your local dealer does not keep it, write to the Author and you will be supplied without delay.

This formula is not a secret. There is no patent on it, you can save from a hundred to two hundred per cent by making your own stock food or tonic and get far better results from your stock. Thousands of farmers have taken advantage of this opportunity and have reported flattering results.

CHAPTER IV.

Diseases Common to the Reproductive Organs

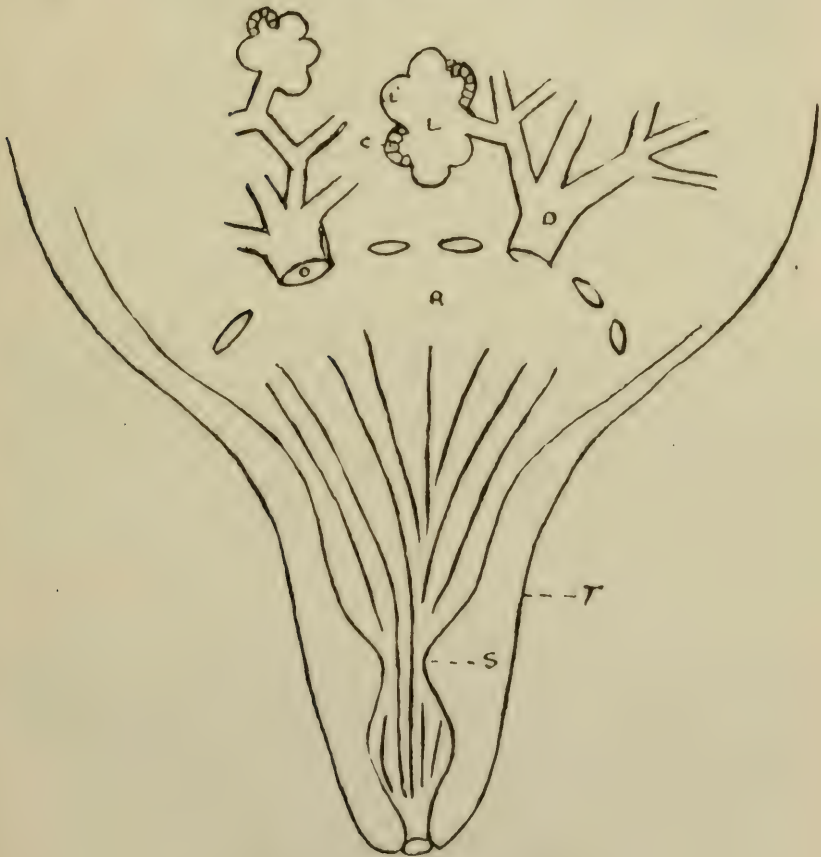


Diagram of teat and one quarter of udder.

s, sphincter muscle; t, teat; r, milk reservoir; d, the duct; o, opening of a duct; l, lobe; l, a lobule lined by c, epithelium; f, folds of mucous membrane.

THE MILK GLANDS AND THEIR FUNCTIONS

The milk glands are essential to the proper performance of the reproductive function. Man has, however, made use of the milk functions and developed it to such an extent that some cows are now specialists in milk production; the result of such specialization is that the milk glands have become larger, the milking habit more persistent, the quantity given greater and the liability to disease increased.

THE UDDER

The arrangement and construction of these milk glands varies in the different animals. The mare's udder consists of two halves each presenting a nipple or teat pierced by openings for the passage of milk; in mares that have never borne young the teats and udder are small, in old brood mares the udder and teats are large and flabby.

The udder of the cow is composed of two halves, each again divided so that we speak of the quarters of an udder; while in the ewe two glands only are present, each with a teat; in the sow the udder extends along the belly and has from eight to ten teats belonging to as many glands, arranged in two rows lengthwise. The interior of the gland is made up of gland tissue formed into lobes, each lobe being made up of smaller lobules, each of these in turn being made up of cells and small ducts. These ducts unite to form large ducts, all of which gradually converge to the center of the gland where they form cavities known as milk sinuses, (they used to be termed lactiferous (milk-making) sinuses).

The milk sinuses empty the lacteal secretion into the teats, each of which is guarded by a sphincter muscle at its lower end. It is this sphincter muscle which is so hard to relax in some cows that causes them to be termed hard milkers. The udder is lined with a delicate cell structure known as **epithelium**, this cell structure extends to the alveoli (lobules).

SHAPE OF MILK GLAND

It has been stated that the internal parts of the udder consist of cells and other structures; and as such, require the use of the microscope more or less in their examination. Besides the cells, considerable connective tissue enters into the udder formation and

the amount of such tissue materially affects the elasticity of the udder, as it does in muscle. The so-called meatiness depends on the presence of a large quantity of connective tissue, the presence of which cannot help but supplant gland tissue (secreting tissue); therefore we can understand why expert udder-judges want elastic udders on their cows. Professor Plumb has made a series of studies of the external form of the udder and the relation of that form to usefulness. We cannot do better than note what he says regarding the matter: "A good type of udder will have its side-line, that of the curve of a circle, if a fine udder, it will be carried along beyond the lines of the circle, by an extension along the belly and up between the hind legs. Such an udder with teats about three and one-half inches long, makes a good type as viewed from the side. Examined from the rear, there should be considerable thickness, the



FIG. 48

MAMMARY VEINS AND UDDER.

I. I. I. I. I.—Udder Veins. F. F.—Forks of the right mammary vein.

Or. Or. Or.—Orifices in which the mammary veins enter the abdomen on the way to the heart. B.—Branch vein. A. E.—Abdominal extension. C. E.—Chest extension. U. D.—Umbilical development of the mammary veins. C.—Connection between the main two veins.

dividing furrow shallow and no meatiness, the good udder when milked out being fairly well shrunken." While the ultimate test of the milking ability will be the scales and the Babcock test, there can be no doubt whatever after a close study of the experiments of Prof. Plumb that the shape and construction of the udder are valuable indications towards getting a correct idea of the milking abilities of a cow. The above authority calls attention to the lack of fore udder in many cows and gives figures to back up his contention—that the

best udder is squarely-balanced, elastic-feeling udder, with a large blood supply. Certain breeds are deficient in this respect, the Ayrshire, however, being strong in fore udder development. There is much in heredity; many stock breeders examine the bull intended to head their herds, for the placing of the rudimentaries (small teats just in front of bag or scrotum), as they believe that such placing is an indication of the probable placing of the teats in his progeny, consequently they want the rudimentaries squarely placed. Prof. Plumb puts the question "May not a material gain in milk-flow be secured by developing the fore udder?" The figures submitted by him in Bulletin 62, of Purdue University, certainly hold out testimony that such improvement may result.

In heavy milkers the udder is often perpendicular. What is termed the funnel-shaped udder is not a desirable type, neither are udders with very large teats. It is interesting to note that no such irregularities of form is presented by any part of the anatomy of the horse, ox, sheep or pig, as shown in the milk glands of the cow. If one-quarter of an udder is diseased, the other quarters do not seem to take on the work of the resting quarters.

FUNCTION OF THE UDDER

The function of the udder is to secrete milk, the stimulus to do so being the maternal function, thus the work of this organ differs from that of others in the body, since its secretion serves no useful purpose to the animal secreting, but is intended to serve as a food on which to raise the offspring.

SECRETION OF MILK

The secretion of milk is held to depend on a throwing off of the epithelial cells of the alveoli, combined with a filtering out of water, salts and other materials from the blood; when that secretion takes place is yet a moot point, but the opinion held by the best authorities is that the secretion of the greater part of the milk goes on during the act of milking. It is now held that the nervous system has a great deal to do with the production of milk, a reasonable conclusion when we remember that the activity of a gland depends largely on its blood supply, that supply being controlled by the nerves, whose action is to contract or widen the blood vessels.

Roehrig describes a nerve which leaves the spinal cord and goes to the udder; filaments from its branches go to the teats, the cis-

terns and the alveoli. When the teats are worked with the hands or milking cups, the nerves surrounding them are irritated, and through them the secreting glands are stimulated, causing their contraction and the discharge of their contents.

The veins along the belly leave the front of the udder and go forward in a more or less winding manner, branch more or less often, and eventually disappear through holes on the abdominal floor, termed milk-wells, then pass along on the inside of the upper side of the breast bone, to be eventually united to the internal thoracic vein (the mammary vein of the human).

MAMMARY VEIN

The mammary vein then will be accepted as affording some indication at least of the milking capabilities of a cow. Some breeders' associations call for certain arrangements of those veins, as follows: Single and double extension, single and double branches, single and double chest extension, or umbilical (navel) veins). The wells vary in number from one to three on each side of the animal, hence they should be of good size.

The greater the capacity of the arteries and veins connected with the udder, the larger the milk secretion will usually be. Theory and practice then seem to unite and back up the ideals of the dairyman, one of which is a great development of the mammary veins. The arterial supply cannot be seen, and only parts of the venous system of the udder are visible, viz., the abdominal veins and those underlying the skin of the udder, yet reasonable conclusions can be drawn from the development of the milk veins.

HOLDING UP THE MILK

Various theories have been advanced to account for this illustration of animal perversity and human peculiarity; the latter probably had been shown in the form of abuse, and of course, stamps the exhibitor as one not fit to own or milk cows. Wing, in "Milk and Its Products," states that the holding of the milk is due to the presence of sphincter muscles at the branching of the ducts, and that this muscular tissue is connected with the abdominal muscles, which is contracted as a result of fright, dislikes, etc., will cause the milk to be retained in the udder, or, as it is termed, the cow holds up her milk. So far we have been unable, either by dissection of udders or consultation of authorities on the anatomy and histo-

logy of the udder, to verify his statement. Furstenberg states that holding up of the milk is due to a congestion of the blood vessels of the teat and gland, which is more tenable than the preceding theory, as it is well known that congestion interferes with the working of any gland.

SUPPRESSION OF MILK

The absence of milk in the udder may result from ill-health, debility, emaciation, chronic diseases of the bag, wasting of the gland from previous disease, or insufficient food, but sometimes it will occur suddenly without any appreciable cause.

TREATMENT

The treatment will consist of removing the cause of the disease, feeding well on rich albuminoid food made into warm mashes, and giving teaspoonful doses of National Sanguitonic. Rubbing and stripping the udder are useful; also the application of Electric Cream after each rubbing twice or three times daily.

BLOODY MILK

Blood may escape with the milk when the udder has been injured by blows, also when it is congested or inflamed, when the circulation through it has been suddenly increased by richer and more abundant food, or when the cow is under the excitement of heat. The milk frothing up and assuming a pink tinge is often the first sign of red water and it may result from eating acrid or irritant plants like the Ranunculaceae, resinous plants, etc. Deposits of tubercular tumors in the udder, or induration of the gland may be efficient causes, the irritation caused by milking contributing to draw the blood. Finally, there may be a reddish tinge or sediment when madder or logwood has been eaten.

When milk becomes red after it is drawn it may be due to the presence of *Micrococcus prodigiosus*. This also grows on bread and is the explanation of the supposed miracle of the "bleeding host."

TREATMENT

The treatment will vary with the cause. In case of congested

glands take one pound package of Bovolax. Dissolve in a gallon of warm water, and give a quart as a drench every three hours until four consecutive doses are given. Thereafter give one-half ounce of saltpeter in drinking water twice daily. Bathe the udder with warm water one-half hour at a time twice daily and rub with NATIONAL ELECTRIC CREAM. If the food is too rich or abundant, it must be reduced; if from acrid plants these must be removed from pasture or fodder. Careful milking is imperative.

BLUE MILK

Watery milk is blue, but the presence of a germ causes a distinct blue shade, even in rich milk and cream. It may reach the milk after it has been drawn, or it may find its way into the opening of the milk ducts and enter the milk as it is drawn.

TREATMENT

In the latter case frequent milking and a full dose of Bovolax followed with an injection into the teats of a solution of two drams of hyposulphite of soda in a pint of water will serve to destroy them.

STRINGY MILK

This may be caused by germs developing in the liquid. The presence of the spores of these germs in the system of the cow may be safely inferred from the fact that in a large herd two or three cows only will yield such milk at a time, and that after a run of ten days or a fortnight they will recover and others will be attacked. I have found that such affected cows had the temperature raised one or two degrees above the others. Like most other fungi this does not grow out into filaments within the body of the cow, but in five or six hours after milking the surface layers are found to be one dense network of filaments. If a needle is dipped into this and lifted, the liquid is drawn out into a long thread. In several cases which have been investigated, the contamination was manifestly due to a spring which oozed out of a bank of black muck soil and stood in pools mixed with the ejections of the animals. Inoculation of pure milk with the water as it flowed out of these banks developed in it the fungus and the stringy characters. By fencing in these springs and giving the affected cows each a full dose of Bovolax followed with two drams of bicarbonate of soda daily, the trouble was arrested promptly and permanently.

CONGESTION OF THE UDDER (Garget)



Swollen and caked udders.

In heavy milkers before and just after calving it is a rule that the mammary gland is enlarged, hot, tense and tender. There is also a slight congestion or swelling extending forward from the gland on the lower surface of the abdomen. This physiological congestion is looked upon as a matter of course and disappears in two or three days when the secretion of milk has been fully established. This breaking up of the swollen bag may be greatly hastened by the sucking of a hungry calf and the kneading it gives the udder with its nose, by stripping the glands, clean thrice daily, and by active rubbing at each milking with the palm of the hand, with or without lard.

The congestion may be at times aggravated by standing in a draft of cold air or by neglect to milk for an entire day or more (overstocking) with the view of making a great show of udder for the purpose of sale. In such cases the surface of the bag pits on pressure and the milk has a reddish tinge or even streaks of blood, or it is partially or fully clotted, is drawn with difficulty and may

be mixed with a yellowish serum (whey) which has separated from the casein, commonly called Garget. This should be treated like the above, though it may sometimes demand fomentations with warm water succeeded by a liberal rubbing with Electric Cream (National) three times daily and giving a large teaspoonful of saltpeter in drinking water three times daily to ward off inflammation. It may be a week before the natural condition of the gland is restored.

CAKED UDDERS

Caked udders in cows and other farm animals are due to overdistension of the udder, excessive exercise with a full udder, lying on and squeezing the udder in a small, uncomfortable stall, or any kind of external violence to the udder.

TREATMENT

Remove the cause if you can find it. Then bathe the udder with warm water (as warm as you can stand to your hands) for one-half hour, after which rub well with National Electric Cream. Repeat this twice daily. Dissolve a pound package of Bovolax in a gallon of warm water. Give a quart every morning and night until the entire gallon has been given. Then you may give a teaspoonful of saltpeter in food once or twice daily and keep on applying the Electric Cream and warm water until the udder is normal. This will relieve a swollen udder and bring it to its natural condition more quickly than any remedy known.

FAILURE TO COME IN HEAT

This complaint is more common among cattle than other farm animals, possibly because of the presence of the germ which causes abortion in a herd, (*Bacillus Abortus*.) When abortion exists in a herd, even though it is only to a slight extent, the organs of generation are more or less depoverished. This accounts for the lack of oestrus or failure to come in heat. There are other causes, such as debilitating diseases and a rundown condition.

TREATMENT

In these cases the patient must be fed grain more liberally, care being taken not to overfeed, but to keep the digestive organs in

good, active condition. The very best way to build up the generative organs is to tone them with a teaspoonful of Genitone on food twice daily. This remedy is claimed by good authorities to be a specific for building up the genitals and is very successful in preventing abortion and barrenness as it acts directly on the nerve centers which govern these organs, giving them tone as well as resisting power.

LEUCORRHEA

This is a catarrhal condition of the genital organs, which discharge a whitish, sticky substance usually following abortion or difficult parturition. Wounds inflicted during the act of parturition upon any part of these organs bring about infection and an abnormal discharge from the genitals, which becomes chronic and invariably prevents conception.

TREATMENT

Irrigate the uterus and vagina with a solution of two teaspoonfuls of Neutrogen Powders in a quart of luke-warm water once daily until the discharge has entirely disappeared. To adult mares and cows give a teaspoonful of Genitone in food twice daily to strengthen the genitals and restore them to their natural health and vigor. For smaller animals reduce the dose according to the size and age of the animal.

ABORTION

Abortion is of two forms, accidental and contagious. The former is caused by accidents such as slipping, crowding into a narrow stall or door, or riding other cattle, etc. The latter (contagious abortion) is due to a specific germ known as the *Bacillus Abortus*, gaining access to the organs of reproduction, which cause an irritation and shut off the nutrition to such an extent as to bring about an involuntary expulsion of the foetus. This results in a depoverished condition of the genital organs which weakens them to such an extent that they will lack resistance to subsequent attacks of the germs, thus bringing about subsequent abortions.

The losses from abortions are not confined to the death of the immature foetus. The attendant conditions of retained afterbirth, sterility and weakling calves, the loss of milk, the cost of combating the disease, and not least the loss in breeding efficiency in valuable animals combine to make an enormous total. In some instances, the loss reaches fifty per cent and even seventy-five per cent of the calf crop. It is the man who has had to combat abortion who can realize how long and difficult a procedure it is. The stock industry has already suffered a setback from the discouragement of owners, some of whom, in despair, have abandoned the keeping of cattle, and others again are contemplating the same course unless relief can be afforded.

SYMPTOMS

The signs of approaching abortion are: Two or three days before the expulsion of the foetus there will be a swelling of the udder, swelling of the external genitals, and the appearance of a slimy, odorless discharge from the vagina. These symptoms may not, however, always appear and abortion may occur without warning. In young animals and those aborting for the first time abortion usually occurs at an early period. This may occur in the third or fourth month of pregnancy and may pass unnoticed because of the smallness of the foetus and the absence of disturbance in the general health of the cow. It may lead the owner to believe that she has failed to conceive. On the other hand, where abortion takes place in the seventh or eighth month of pregnancy, retained afterbirth is a common occurrence and the act is accompanied by restlessness and pain. In some cases pregnancy may continue almost to the full term and the calf may be born alive, but weak and soon dies. In herds where the disease is known to be present, these cases should also be considered as abortions.

TREATMENT

In every event the genital organs must be strengthened and built up to their natural strength and resisting power in order that they may perform their proper functions. For this purpose give one teaspoonful of Genitone in food once daily, per cow, for one month after abortion has taken place. Then rest until about six weeks before the usual period when abortion sets in, and continue as above until the cow has delivered a healthy calf. If a cow in your stable has aborted, destroy the calf, afterbirth, and litter by

fire or by burying them deeply, and thoroughly disinfect the entire stable. Remove the member which has aborted to a separate clean stable and flush the genitals once daily with a 1 per cent solution of lisol or a 1 to 2,000 solution of bichloride of mercury, using at least one gallon at each time. Use a fountain syringe or siphon for this purpose and continue the flushing until all abnormal discharges from the genitals have disappeared. Do not breed the animal for at least two or three months in order to give the Genitone a chance to restore the reproductive system to its natural condition, when it will be more able to resist possible subsequent attacks of the germs and also be able to carry the foetus to its full maturity.

This is the latest and has proven to be the most successful treatment for abortion at the present writing. The secret of success in treating abortion is to be thorough in executing the above instructions.

BARRENNESS

HOW TO MAKE BARREN COWS AND OTHER FARM ANIMALS PRODUCTIVE

There is scarcely a farmer or dairyman who has not one or more barren cows in his herd that are eating up the profits derived from the productive ones. The barren cow or heifer takes the place of one which might just as well net its owner from \$100.00 upward annually in production of milk alone. In addition to this the calf is valued according to its individual merits and breeding. The barren cow eats almost the same amount of feed, occupies the same amount of room in the stall or pasture, and gives you practically nothing in return. She keeps you in constant hope of bringing returns, especially so if she is well-bred and of good individual merits. This will give you special inducements to keep her longer than you otherwise would without sending her to the butcher's block.

THE CAUSE OF BARRENNESS

There are three principal causes for barrenness. First, the one most commonly noticed by breeders and dairymen, occurs where there is an abnormal secretion of the mucous membranes of the generative organs, which becomes chronic in time and of an of-

fensive odor. This is usually due to difficult parturition, injuries sustained during the act of parturition, infection by unclean hands and instruments of attendants, and also by retaining the placenta, where the placenta is not removed and is allowed to remain within the uterus and can only be carried out by the process of sloughing. All these causes render the mucous secretions more or less acid in reaction, a fact which prevents conception by antagonizing the spermatozoon (germ of life).

Second are those causes by which there exist specific germs within the genitals, which causes an abnormal condition and alter the secretions of the same, such as the germs of abortion, which are very common and cause a great deal of trouble at the present time; also altered conditions of the os uterus (mouth of the womb) due to the existence of tumors or malignant growths obstructing the natural opening of the os, thus preventing conception by excluding the spermatozoon entirely.

The third cause is improper development, or a diseased condition of the genitals, which renders them unable to perform their natural functions.

TREATMENT

In every case, no matter what might be the cause of the disorder, you must first of all ascertain the cause and remove it. This can be done by making a careful exploration with your hand, which must first be thoroughly cleansed and lubricated with sweet unsalted hog's lard. Introduce it through the vulva into the vagina and carefully note any abnormality which you may feel; or you might use a vaginal speculum, which is made to so dilate these organs as to give you a clear view of the parts within. If you notice a whitish discharge from the os uterus or vagina, it is a sure sign of an abnormal secretion of the mucous membranes, this is almost invariably of an acide reaction. In this case you must flush the uterus and vagina with a tepid antiseptic solution (lysol 2%) using a fountain syringe or siphon. After this you may inject the following solution once daily or until the discharge has ceased: Take 1 teaspoonful of Neutrogen, dissolve in a pint of water, which has been recently boiled and cooled down to body temperature and inject as above stated.

This will neutralize the secretions, give nature a chance to repair the defects, and render the surroundings more favorable to con-

ception. This is also the proper treatment when barrenness is caused by retention of the placenta, but it is advisable to administer tonics which are hereinafter mentioned. When the placenta is retained it should always be removed by hand within forty-eight hours after parturition to avoid these abnormal conditions, as the prevention is much easier than the cure.

When barrenness is due to the existence of abortive germs, you must use a stronger antiseptic solution to destroy these germs. For this purpose make a 1 to 2,000 solution of bichloride of mercury and flush the genitals as above directed, always being careful to have the solution at body temperature and all utensils and instruments thoroughly clean. The bichloride solution must not be prepared in a tin or metal vessel; a wooden bucket is probably the most practical and economical in this case. A gallon of the solution is the average amount used for each flushing in the latter case. If tumors or abnormal growths exist, they must be removed surgically and the bichloride solution will do to use as an antiseptic to effect a proper course of healing. When you have succeeded in restoring the genitals to their natural condition, by pursuing the above course, you may start to breed the cow again, being careful that everything is normal before you start. When barrenness is due to abortion or there has been a catarrhal condition of the genitals for some time, you will find them greatly depoverished and in need of stimulants and tonics to be given within in order to restore them to their natural vigor and functional activity.

In cases of the third kind, when there is a faulty development of the genitals, you will frequently find it due to high feeding and inbreeding for a special purpose, thus developing the nervous system for this special purpose at the expense of the organs of reproduction. It is for this reason that you will find more barren cows in herds that are fancy bred than in the more common ones. Of course you may answer to this that the common cow or animal is not so valuable and is, therefore, sold for beef without delay. This is true, but if there were some means of keeping actual count, you would surely see the well-bred female ranking much higher in number among the barren ones than those of common blood.

After ascertaining the cause of barrenness and removing it as previously described, you are now ready to build up the genital organs, which are either impoverished from the existence of abnormal conditions, or are ill-developed naturally. Both of these conditions must be treated by administering such agents as act directly upon these organs and favor such repairs and developments



Barren cow and her calf—Cow made productive by artificial means.

as may be required to assist nature in restoring them to their natural condition, which then enables them to perform their natural functions.

To prepare the patient for this treatment we first give a pound of Bovolax dissolved in a gallon of warm water, giving one quart every four hours until the entire gallon has been given. After this, we give a teaspoonful of Genitone once daily in food, which acts directly upon the nerve centers of the genital organs. If the patient is excessively fat, you must reduce her condition so that she is comparatively lean before you begin the treatment. The Genitone is prepared for this special purpose only and requires no special skill to apply it. It comes in powder form and thus can be easily given in bran, meal, silage, or other food. Begin to give the powder at least three weeks before you breed the cow and continue two weeks after. This treatment is inexpensive and thoroughly reliable.

If your dealer does not keep any of these new and most effective preparations, notify the author of "Rural Veterinary Secrets" and he will advise you where to get them without delay.

RETAINING THE AFTERBIRTH (Placenta)

Animals that retain the afterbirth have an abnormal condition of the genital organs, most generally following a premature birth, or abortion. Sometimes the foetus (newly-born) is fully developed and expelled naturally, but the afterbirth is immature and consequently adheres to the cotyledons within the uterus, where it must be disconnected by hand or remain to be sloughed off at the expense of the patient's health and usefulness to the owner. The milk from a cow which has retained the placenta and has been allowed to slough is not fit for human food, nor is it good for her calf, as some liquids from the decomposed tissues are absorbed and thrown into the circulation from which the udder draws the milk. Such milk usually has an offensive odor, smelling similar to the decomposed tissues which are cast off through the vagina and contains particles of this foul substance. It is natural for an animal in this condition to become feverish and run-down, partially lose her appetite, give less milk and of poor quality, and become generally unthrifty and unprofitable for at least several months, which is expensive to the owner.

TREATMENT

This trouble can easily be prevented by strengthening the nerve and blood supply to the genital organs, thus assisting nature to repair the defects and restore the natural condition of these organs, enabling them to perform their natural functions. To prevent retention of the afterbirth give each cow or mare that is inclined to retain, a large teaspoonful of Genitone in food night and morning until a healthy delivery of the young and afterbirth has been affected. Genitone will prevent abortion or premature births and will assist to bring a timely development of both foetus and afterbirth. Should the latter be retained a short time after delivery, the above treatment should be continued until it is expelled, which usually takes place within twenty-four hours after delivery. Irrigation of the uterus with five grains of Permanganate of Potash dissolved in two gallons of warm water once daily until the entire afterbirth is expelled will greatly assist in connection with the above named treatment, especially in a stubborn case.

WARTS ON COWS' TEATS

These are often very troublesome, yet they may be greatly benefitted or entirely removed by smearing them thickly after each milking with Glycrole. If they persist they may be cut off with a sharp scissors and the sore touched with a stick of lunar caustic. They may then be enointed with Glycerole and the caustic repeated as demanded in order to prevent their renewed growth.

SCABBY TEATS

Scabby teats may also be smeared with Glycerole twice daily after having been washed clean. There is nothing that makes them so soft and pliable and heals as quickly as Glycerole.

HARD MILKING COWS

Every farmer has had some experience with hard milking cows, especially those who do their own milking or have an independent hired man. Such cows are aggravating to the owner as well as to the milker, because not only does it take twice as long to milk them, but also two or three times as much work and patience. The cause of hard milkers is to small an opening in the distal end of the teat, through which the milk must naturally be forced.

TREATMENT

You may enlarge the natural opening in the teat with a teat bistoury, which will permit a larger stream of milk. This will come much easier and relieve the milker from extra labor. Be careful to have the bistoury thoroughly clean before using it, to avoid infections. This can be done by boiling in water for twenty minutes. The teat must also be cleaned by washing with soap and water before the bistoury is employed. Never use the bistoury when a cow is dry as the cut surface will easily heal up and might tend to close the opening entirely; while, if a cow is giving a fair amount of milk, the milk flow will keep an opening of proper size to allow a free flow.

INVERSION OF THE WOMB (Uterus), CASTING OF THE WITHERS



Uterine Prolapse (Rear View).

Inversion of the uterus (Casting the withers).

This is a serious condition, especially in sows, mares and ewes, and as a rule necessitates the immediate employment of the stockman or veterinarian. It may be due to a rough delivery or prolonged labor, too much traction on the membranes, poor condition due to lack of feed, or as a result of standing with the hind end lower than the front end. The stockman may have to return the organ and should prepare himself as for removal of the afterbirth; have the animal kept on its feet, then cleanse the protruded womb with an antiseptic solution, containing Sugar of Lead, 2 ounces to the gallon of warm water, removing any part of the afterbirth that may be attached; then by doubling his fist and applying it to the center of the mass, press it steadily and gently forward, when the animal strains, being content just to hold his own. If the straining is severe, pinch the back or put on a tight, strong girth. The organ having been successfully reinverted and placed back in its natural position, care should be taken that both of the horns (right and left) are also properly reinverted and placed in their natural position. Then place the patient in a single stall with the hind legs elevated about twelve inches higher than the fore legs, so that the weight of the contents of the abdomen leans forward, thus drawing the genitals forward with them and tending to keep them in place. The patient should be kept in this position for at least a week. To

make sure that the animal will not again attempt to throw out the womb, three or four strong sutures with twisted silk or linen should be made through the lips of the vulva.

A tonic should be given in food twice daily. For this purpose Sanguitone Compound, in teaspoonful doses, is highly recommended.

THE SECRET OF INCREASING THE FLOW OF MILK IN A DAIRY COW

If you wish to make a milk record with your dairy cow, it is advisable to begin to train her for this purpose when she is a year old. The well groomed and well fed yearling heifer starts to develop her udder even before this age. When slight natural congestion in this organ is first noticed, it may be wonderfully developed into a stronger and more powerful milk producer by hand rubbing and manipulation applied by the owner or groom three or four times daily from five to fifteen minutes at a time. The most successful salesman will handle his heifers every time he enters the stable. He not only develops these glands, he also gains the heifer's confidence and makes her calm, docile, and strong of nerve. By the time this heifer becomes fresh she has the natural form, development and disposition to make any exceptional milk producers. Of course, the breeding and general conformation should cut a big figure in picking your subject for a winner.

After the calf has been weaned and you wish to put her to the test, you should see that her digestive organs keep in perfect health and condition in order to support the constitution and the demands of the udder upon the system for a big flow of milk. This having been done, your heifer is in good shape to stand a liberal amount of crowding for her milk record. Of course, to increase the flow of milk you must use good judgment in increasing your food ration. This should be wholesome, well-balanced and not too heavy. Give water more frequently during this period. To make the udder more active and more productive, add one tablespoonful of Galactagogue Powders to each meal. These powders, applied as above directed, increase the appetite, aid digestion, relieve the dangers of overfeeding and stimulate the activity of the udder to such an extent as to wonderfully increase the flow of milk of any healthy cow, no matter what age she may be.

If you are competing with your neighbor or anyone else for a milk record, you had better keep this secret to yourself, or he will be doing the same thing for his heifers and cows.

If your druggist does not keep any of the remedies prescribed in "Rural Veterinary Secrets" write to the author at his home office and he will advise you where to get them.

PARTURIENT PARESIS (Milk Fever)

Milk fever is a non-febrile disease of cattle, swine and goats occurring at or following parturition and characterized by general paralysis and usually unconsciousness.

The disorder is common among cows, especially valuable dairy cows, which are heavy feeders and deep milkers. It usually occurs at the acme of lactation in cows that are well bred and in prime condition. Thin cows or very fat cows do not seem predisposed. When delivery has been difficult, parturient paresis is less apt to occur than when the birth has been easy and the expulsion of the afterbirth prompt. Usually it occurs in cows from the third to the fifth calving. The causes are unknown at the present writing.

SYMPTOMS

The symptoms usually begin twelve to forty-eight hours after delivery. A few cases are recorded where the attack came on during or before birth. The principal symptoms are suddenly develop-



A typical case of milk fever in first stage.

Photo by Author.

ing general motor and sensory paralysis, with loss of consciousness. After showing some symptoms of languor, weakness and staggering gait, the cow lies down. She may regain her feet, but arises with difficulty. Finally, she becomes completely paralyzed and unconscious. Often the patient is found lying on her sternum with her head thrown around against the flank. In other cases she lies flat on her side. The respirations are slow and deep, the temperature normal to subnormal. From the nostrils a lymph-like fluid is dis-



After patient has been placed in comfortable position.

Photo by Author.

charged. Besides these general symptoms those of specific paralysis of the cranial nerves occur.

TREATMENT

The most successful and simple, is the air treatment, discovered by the writer July 21st, 1903. This consists of inflating the udder with air enough to distend it to its full capacity by the use of a milking tube attached to a rubber hose and bulb. The animal is then placed on her breast in a natural position and if necessary, should be propped up with bags filled with grain or feed. To



Milk fever patient, convalescing, three hours after applying the air treatment.



Same cow two days later.

keep a strong heart, a teaspoonful of Aromatic Spirits of Ammonia may be placed on the tongue every two hours. Do not attempt to give physics or large doses of medicine, as the animal is usually unable to swallow and there is danger of the medicine finding its way down into the lungs and bringing about suffocation. This is the air treatment, which is almost a specific and is now saving thousands of the most valuable dairy cows annually.

THE AIR TREATMENT—HOW IT WAS DISCOVERED

MILK FEVER (Parturient Paresis)

Until 1897 over 50 per cent of milk fever cases proved to be fatal. In 1897 Dr. Schmidt Kolding of Denmark recommended the injection of a solution of Potassium Iodide, $2\frac{1}{2}$ drams of the drug being dissolved in a quart of warm water and injected equally into the four teats. This produced a wonderful improvement in the mortality of the victims, Schmidt claiming to save 90 per cent.

The writer followed the advise of Dr. Schmidt from 1898 to 1903 with good success and from time to time had noticed that those patients into whose teats he permitted a liberal amount of air to enter while injecting the solution made much quicker and more satisfactory recoveries. He, therefore, continued to be liberal with air in his treatment of these cases, and in one year, viz., from January 1, 1903, to January 1, 1904, treated 167 cases, admitting more and more air, out of which 161 recovered, only six being lost. On the night of July 21, 1903, he was called to the farm of August Gnewuck in the town of Lebanon, Dodge County, Wisconsin, to treat a cow with milk fever. While getting his apparatus sterilized (the drug having been measured out and the water ready for making the solution) Mr. Gnewuck told several funny stories which very much amused the writer. In the meantime the udder was injected, the cow comforted and placed on her sternum and the owner given his instructions and requested to phone about the condition of the patient after six or eight hours. After the writer had departed and had passed the six mile post on his homeward trip, he discovered that he had forgotten to add the Potassium Iodide and had really injected nothing but warm water and a liberal amount of air. Fearing that his client would report before morning that the patient's condition was much worse on account of this mistake, he could not sleep but waited patiently for the ring of the telephone. When after the fifth hour the owner telephoned that the patient had gone to her stall and was up and eating, the writer was indeed surprised. But it at once became apparent to him that the Potassium Iodid was not the curative agent in this treatment and from past experience he concluded that the oxygen in the air was most likely entitled to the credit.

Experiments were then undertaken with two succeeding patients, there being injected a liberal amount of air and only enough

warm water to keep the air from returning. Both of these patients recovered in from three to four hours, taking less time than was the case with the Potassium Iodide treatment. This discovery was reported to the Wisconsin Society of Veterinary Graduates in August, 1903. This was the first intimation of the discovery of the air treatment and on January 29, 1903, on page 1170, Volume XXXIV of "Hoard's Dairyman" under the veterinary query department, of which the writer was editor, he wrote and published the **first article** giving credit to the air treatment.

The second intimation of the air treatment and the recommendation of its use was published by the writer February 12, 1904, on page 18, volume XXXV of "Hoard's Dairyman" while answering a query from West Concord, which called for information regarding the oxygen treatment. It was after this second article on the air treatment that university veterinary departments and veterinary colleges got busy announcing the discovery of the air treatment and recommending the bicycle pump to inflate the udder with air, but none of them gave credit to "Hoard's Dairyman," nor to its veterinary editor, who made the discovery on July 21, 1903.

CHAPTER V.

Diseases Common to the Liver and Kidneys

CONGESTION OF THE LIVER (Hepatitis)

Hepatitis is secondary to many infectious diseases (influenza, blood poison). It may also be secondary to poisoning with arsenic or phosphorus. In some instances the cause may be due to parasites which wander into the liver substance. The liver is congested, swollen, spotted with dark red hemorrhages. The consistency is softer and more friable than normal. There will be a marked sensitiveness, upon pressure, on the region of the liver.

TREATMENT

The treatment is not very satisfactory as its connection with other diseases makes it too complicated, even for the most accomplished veterinarian.

YELLOW JAUNDICE

This is a yellowness of the visible mucous membranes of the body, which is an indication of a sluggish liver due to some derangement of the digestive and other vital organs. The yellow appearance of the mucous membranes is an indication of bile in the blood, which has been reabsorbed from the gall bladder, where it should have been discharged into the alimentary canal under natural conditions, but for some reason has been retained in the gall bladder.

TREATMENT

Give an ounce of Aloes and $\frac{1}{2}$ dram of Calomel in a ball or drench at one dose. Then follow with 2 tablespoonfuls of Bovolax in food three times daily for two weeks. Avoid heavy feeding. Feed bran mashes once daily. Grass or roots should be the main diet. Good clover or alfalfa hay is better than timothy.

GALL STONES

Gall stones are very rare in animals. They occasionally are met with in cattle and dogs. The principal symptoms they induce are colic and digestive disturbances.

TREATMENT

The treatment consists of large doses of Bovolax three times daily, 3 to 4 ounces per dose, or large doses of Carl's Bath Salts.

URINARY TROUBLES

Inability to pass urine is common in horses and dogs, but not so common in other animals. The immediate cause of the retention of urine in the bladder is usually partial or complete paralysis of the sphincter muscle at the outlet of the bladder. Very often this outlet is only closed by a spasmodic contraction of the muscle (occlusion) and the urine is retained for some time. In such cases the symptoms are often mistaken for colic.

TREATMENT

If the sphincter muscle is paralyzed, either partially or entirely, the urine should be drawn with a catheter several times daily and the system strengthened with Sanguitone in teaspoonful doses, three times daily until relieved. The animal should be placed on a light diet during the treatment and for several weeks thereafter. If due to the latter, viz., a spasmodic closure (occlusion) of the outlet of the bladder, give an ounce of National Specific for Urinary Troubles and Colic in several ounces of water. This usually brings relief in about one-half hour. In stubborn cases repeat the dose in an hour, but usually one dose is sufficient.

CHAPTER VI.

Diseases Common to the Brain and Nervous System

CEREBRAL APOPLEXY

Cerebral apoplexy is a rare disease among cattle. It may be due to degeneration and consequent rupture of the blood vessel in the brain.

SYMPTOMS AND TREATMENT

The attack is sudden, the animal in most cases falling as if it had received a blow on the head. It may stagger and reel some time before going down. After falling, there are convulsive movements of the legs or the animal sinks into insensibility. There may be remissions in the severity of the symptoms, but the pressure from the continued escape of blood soon causes death. Rest, quiet, friction to the legs and surface, frequent turning of the animal and cold to the head are to be practiced, if treatment is attempted.

CONGESTION OF THE BRAIN

There is a form of congestive apoplexy affecting cattle which are in a plethoric condition. The congestion or overfilling with blood, causes pressure on the brain substance and disorganizes its function. It occurs mostly in hot weather. In this disease the symptoms are somewhat similar to those exhibited when the animal has inflammation of the brain, but the onset is more sudden, the duration is shorter and there is less fever. There may be frenzy or coma, or alternations, one with the other. The intelligence is diminished, staring eyes, bracing with the legs, pressing against the stall partition or manger, mucous membranes become red. This condition usually terminates in recovery.

TREATMENT

In such cases bleeding should be resorted to immediately. When the power of swallowing is not lost, purgatives should be administered. Cold applications to the head should be made.

CONCUSSION OF THE BRAIN

Severe blows on the head, striking the head against some hard object while running, or falling on the head, may cause concussion of the brain.

SYMPTOMS AND TREATMENT

The symptoms and the treatment that is indicated differ very little from what has been said under congestion of the brain. In some cases it may be necessary to remove a piece of bone that is pressing on the brain or to remove a clot of blood under the area that received the blow.

EPILEPSY

This affection is characterized by the occurrence of sudden convulsions. The animal may appear to be in a fair state of health usually, but at any time, in the stable or in the field, it may have a convulsion in which it will fall and lose consciousness. Epilepsy must not be confounded with vertigo—fainting which is an effect of heart troubles.

The exact cause of epilepsy in the majority of cases is unknown. Post mortem examinations in many instances have failed to discover any lesion in connection with the brain or nervous system; while in other instances disease of the brain has been found in the form of thickening of the membranes, abscesses, and tumors. In some cases the affection has been manifested in connection with a diseased condition of the blood. The cause has also been traced to reflex irritation, due to teething, worms and chronic indigestion.

TREATMENT

When the affection is due to the last named causes the treatment may be successful, if the cause is removed. If there are

symptoms of worms or of indigestion, follow the general treatment advised for those troubles under their proper heads in this book. If due to irritation caused by teething, the inflamed gums must be lanced. Examination of the mouth often develops the fact that one of the temporary teeth causes much irritation by remaining unshed, and thereby interfering with the growth of a permanent tooth. The offending tooth should be extracted. When the cause of epilepsy cannot be discovered, it must be confessed that there is no prospect of a cure. Some benefit may be expected from the occasional administration of a purgative dose of medicine. A pound of Epsom Salts dissolved in a quart of warm water, for a cow of average size, may be given as a drench once or twice a week. In addition to the purgative, 4 drams of Bromid of Potassium, dissolved in the drinking water, three times a day, has proved very beneficial in some cases.

SUNSTROKE (Prostration from Heat)

Owing to the fact that cattle are seldom put to work at which they would have to undergo severe exertion, especially in collars, they are not frequently prostrated by the extreme heat of the summer months. When at pasture they select the coolest places under the shade trees, in water, etc., when the heat becomes oppressive, and thereby avoid, as much as possible, the effects of it. Horses, however, are more subject to this trouble, because they are compelled to work under the direct rays of the hot sun.

It does happen, however, that cattle that have been kept up for the purpose of fattening, when driven some distance in very hot weather, are sometimes prostrated, but it must be remembered that it is not really necessary for the animal to be exposed to the rays of the sun, as those confined in hot, close places may suffer. This often happens in shipping, when they are crowded close together in cars.

SYMPTOMS

The first stages are those of exhaustion—dullness, panting, frothing at the mouth, tongue hanging out, irregular gait, uneasiness, palpitation—when, if the circumstances which tend to the prostration are not mitigated, the animal staggers or sways from side to side, falls, struggles for a while, and then gradually becomes quiet, or the struggles may continue, with repeated but ineffectual

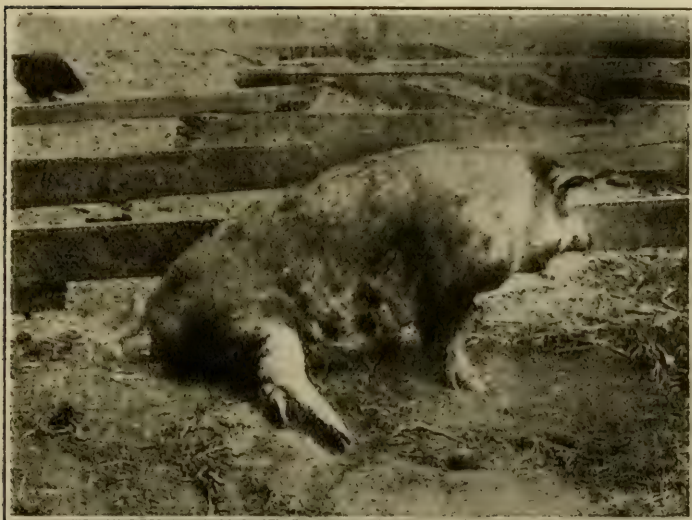
efforts to regain a standing position. In serious cases the attack may be very sudden, unconsciousness occurring without continued or distressing premonitory symptoms.

TREATMENT

At first, when not very serious, removal to a quiet, sheltered place, with a few days on a reduced diet, is all that need be done. When the animal has fallen, dash cold water or ice water on the head; rub the body and limbs with cloths or wisps of straw, and continue the rubbing for a considerable time. If the power of swallowing is not lost (which may be ascertained by pouring a little cold water into the mouth), give three drams of stronger liquor, ammonia diluted with a quart of cold water. Be very careful in drenching the animal when lying down. Repeat the drench in a half hour, and an hour after the first one has been given. Instead of ammonia, a drench composed of Spirits of Nitrous Ether in a pint of water may be given, if more convenient, but the ammonia drench is preferable. If unconsciousness continues, so that a drench cannot be administered, the same quantity of ammonia and water may be injected with a syringe into the rectum. The popular aqua ammonia, commonly called "Hartshorn," will do as well as the stronger liquor ammonia, but as it is weaker than the latter, the dose for a cow is about $1\frac{1}{2}$ ounces, which should be diluted with a quart of water before it is given to the animal, either as a drench or an enema. When ammonia cannot be obtained a pint of whiskey in a quart of water, or an ounce of tincture of *Digitalis* may be given.

As soon as the animal is able to rise it should be assisted and moved to the nearest shelter. All the cold water it will drink should be allowed. The ammonia or spirits of nitrous ether drench should be administered every three hours so long as there is much failure of strength. The diet should be limited for several days—bran slops and a little grass. When signs of returning strength are presented, 6 ounces of *Bovolax* dissolved in a quart of warm water may be given in those cases which have been down and unconscious, but not give it while much weakness remains, which may be for several days after the attack. The flesh of an animal that is suffering from heat stroke should not be prepared for use as food. On account of the fever with which the animal suffers, the flesh contains toxins that may render it poisonous to the consumer.

PARALYSIS



Hog suffering from paralysis of hind limbs.

Paralysis, or loss of motion in a part, may be due to a lesion of the brain, of the spinal cord, or of a nerve. It may also be caused by reflex irritation. When the paralysis affects both sides of the body, posterior to a point, it is further designated by the name paraplegia. When one side of the body (a lateral half) is paralyzed, the term hemiplegia is applied to the affection. When paralysis is caused by a lesion of a nerve, the paralysis is confined to the particular part supplied by the affected nerve.

Paralysis may be due to concussion of the spine, fracture of a bone of the spinal column with consequent compression of the spinal cord, concussion of the brain, or compression of the brain. An injury to one side of the brain may produce paralysis of the same side of the head, and of the opposite side of the body, hemiplegia. Paralysis may occur in connection with parturient apoplexy, lead poisoning, ergotism, etc.

TREATMENT

Almost all farm animals are subject to paralysis due to the above mentioned causes, but hogs very frequently become paralyzed in the hind quarters, which is said to be due to early and constant feeding of corn while the pig is in its growing age. Apply mustard to the region of the spine. Turpentine and lard will answer in the absence of mustard. Some authorities recommend the firing-iron. Internally give Bovolax to relax the bowels and tone the nervous system. This may be followed by teaspoonful doses of powdered Nux Vomica in food three times daily. This dose is for horses and cattle. Smaller animals must be given less according to size and age.

CHAPTER VII.

Practical Aid in Difficult Parturition

THE TIME OF PARTURITION

The time of parturition has arrived according to the breeding book, which contains the record of service, etc. There are, however, symptoms shown by the pregnant animals, which afford reliable indications of the nearness of the act. The swelling of the external genitals (vulva) enlargement of the udder, hollowness of the rump, especially in cows, of the space between the pin bones and the tail head, wax on the teats in mares, a flow of milk, making of the bed by sows, glistening appearance of the udder, uneasiness, a desire for solitude, slight pains gradually increasing, followed by the pushing forth of the water bag and the possible escape of its contents show that labor is not only close, but that it has started.

DELIVERY

If all goes well, the head and fore feet are presented (sometimes the hind feet) and the young animal is in a short time in a new world. (See Fig. 49.)

The natural delivery in mares is of short duration, only five to fifteen minutes usually elapsing after extrusion of the water bag; the cow may take one to two hours to deliver the calf, extending to that many days. Ewes take about fifteen minutes to deliver or less, and if twins are present the intervals between births may be from fifteen minutes to two hours or even days. Assistance should not be offered until the water bag shows.

The sow takes a variable time to deliver, depending on the number of pigs—may take from ten minutes to several hours. In natural cases little assistance is needed, and when given should be of the right kind; the attendants should only apply traction when the young animal is in the right position, and only when the expulsive effort is being made; the direction of the traction should be away from the back bone, that is towards the hocks of the dam, downward if the animal is standing. The foal is often born in its membranes, and should be released immediately from them, especially about the head; any mucus present being removed from the mouth and nostrils. The membranes of the

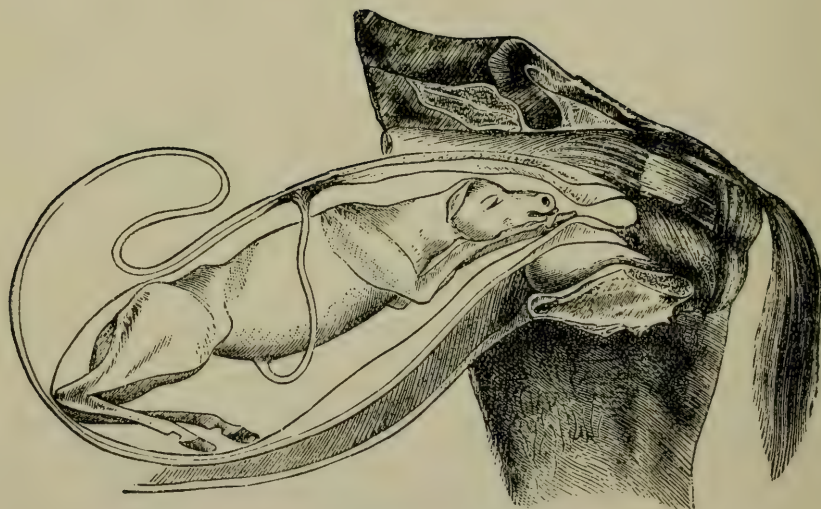


FIG. 49.
Natural position of the foetus.

calf and lamb do not always follow right after delivery; in the cow they remain for days; in the ewe rarely so; while in the sow it is the exception for such to occur; the reason for retention of the membranes in ruminants (cow and ewe) is due to the peculiarity of the attachment of the membranes in those animals, which will be remembered from the description of arrangement of the mucous (lining) membrane of the uterus in those animals.

DIFFICULT DELIVERIES

If the presentation has been right, the usual labor is of short duration, if however, the pains have begun and persisted for a long time without delivery, some hindrance to the normal delivery may be suspected, the cause of such unnatural happenings are numerous; may be due to wrong presentation, such as two hind legs coming together; the foetus coming upside down (see Fig. No. 50, Sterna Abnormal Position) or with the head turned back, excess in volume of the fetus, contraction of the genital passages, enlargement of the head, due to tumors, etc. In such cases the employment of a veterinarian is advisable and profitable, because he is acquainted with the parts, has the proper instruments and drugs. The time of calling the professional man should not be left until the dam is exhausted or injured internally from the movement of the fetus; the longer such cases are left the greater the danger of inflammation of the womb or tearing or wounding internally of the dam. If the stockman is sufficiently expert let him bare his arm to the shoulder, anoint with carbolized oil, one part of carbolic acid to ten linseed oil, or hog's lard, introduce the arm into the passage and endeavor to find the cause of the trouble. If a head and one foreleg are shown fasten ropes (one-fourth inch) on the parts, push them forward into cavity and then try and get the missing limb, raise it and bring all into the natural position, the head between the two forefeet (See Fig. 49); if the head is down and the forefeet presented, rope each foot, push them forward and try to raise the head and bring it towards you along with the feet (See Figs. 52, 53, 54, 55, 56 and 57). The stockman will, on examination, better understand the conditions than from any written directions, and will be successful according as he adapts himself to meet these conditions. Mares and cows are more easily delivered when in the standing position; if they lie down and the work becomes harder to perform. In case of twins care must be taken not to rope one leg of each twin, but to make sure that you keep each individual separate and take one at a time. (See Fig. 51, Twin Pregnancy). In cases of difficult delivery in ewes an assistant may be got to hold the ewe with

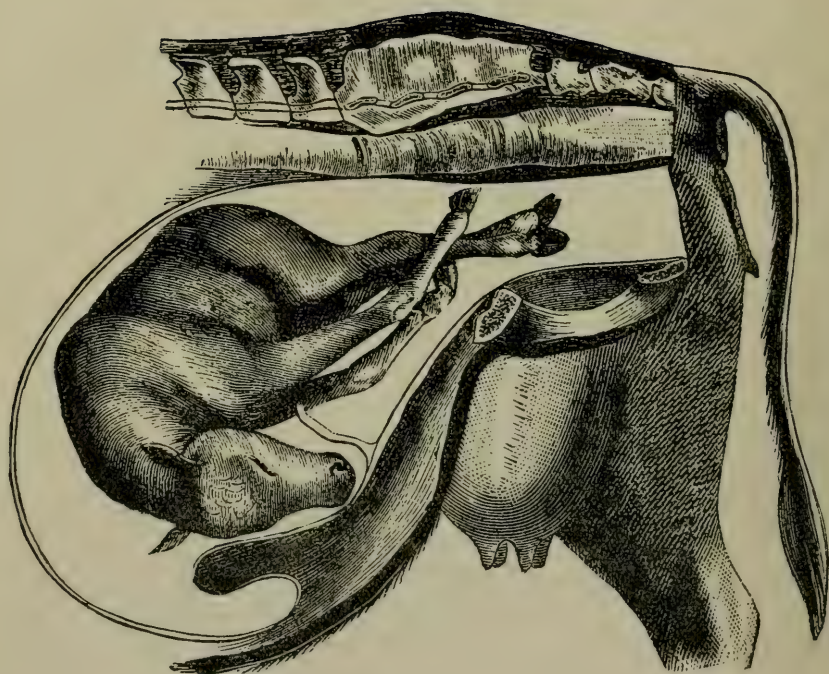


FIG. 50

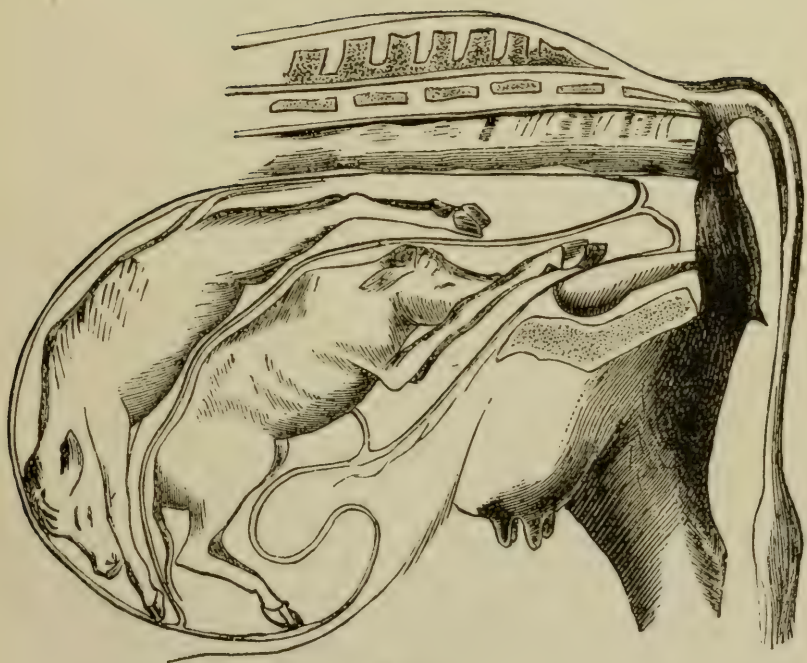


FIG. 51

Twin Pregnancy—Cow.

the hind legs up in the air, the head down, thus throwing the bowels downwards and consequently giving more room to work, or the ewe may be turned on her back, but kept in this position only for a short time. In animals running overtime Nature is generally allowed to take its course; it might be advisable in mares that have gone overtime, and who have had milk in their udders for a few days, to attempt delivery.

ATTENTION TO THE NEWBORN

The treatment of the young animals is not very formidable, as stated; remove the membranes, clean out the mouth and nostrils; examine also to see if the newborn has the natural apertures for the passage of urine or feces. In some cases attention to the navel string should be cut about one and one-half inches from the body and securely tied and thoroughly dressed with Dermasote or Elk's Absorbing Ointment daily, until it dries up, shrivels and drops off. In lambs, calves and pigs slight scraping of the finger nail on the cord will sever the string and prevent bleeding. If life seems about gone, whip with a wet towel, work the fore limbs, breathe into the nostrils at intervals coinciding with the limb movements, pull the tongue gently forward, then let it retract and again pull forward, repeating the movements at intervals for ten or fifteen minutes or longer, rub the body dry, and bring to a warm place, a slight stimulant such as brandy and water or a little sweet nitre and warm milk may also be given with benefit. Get the newborn to suckle as soon as possible so that it may get the action of the first milk (colostrum) and thus remove the meconium (the accumulated excrement of fetal life). The meconium may have to be removed; use the oiled finger, or injections of warm water and oil; avoid giving purgatives; foals are often started scouring, and are lost as a result of giving some medicine. A heaped teaspoonful of fresh (unsalted) butter may be given to the foal with good results if a little constipated; if a ewe refuses her lamb, the one refused (in case of twins) should be rubbed over with the one taken, or if one is dead, skin it and put the skin on over the one refused, or put the ewe and refused lamb together by themselves for a time. In case of ewes the wool should be trimmed around the udder to allow the lambs to get at the teat, this will also prevent the lamb sucking the wool, with the result sometimes of wool-balls in the stomachs. After getting the young animal to suckle once, leave the dam and offspring to themselves; if the afterbirth has come away, remove and bury; the disgusting practice of letting animals eat the membranes should not be permitted.

TREATMENT OF THE DAM

The treatment of the dam after delivery will determine to a great extent the growth and development of the offspring, if the dam is limited in quantity of food, or poor quality given, the offspring will be weak, stunted or of small growth. Keep the dam comfortable and do not annoy with many attentions, if at all chilled, blanket, give warm mashes, laxative food (grass, clover, hay, bran and oats) milk and water with the chill off for a few days. If intending to show foals the dam had better not be worked, if not the dam may be worked for a quarter of a day, later half days until getting back to the usual routine, if worked the foals should be placed in boxes together and fed. Entire rest from work should be allowed mares for at least a week after foaling.

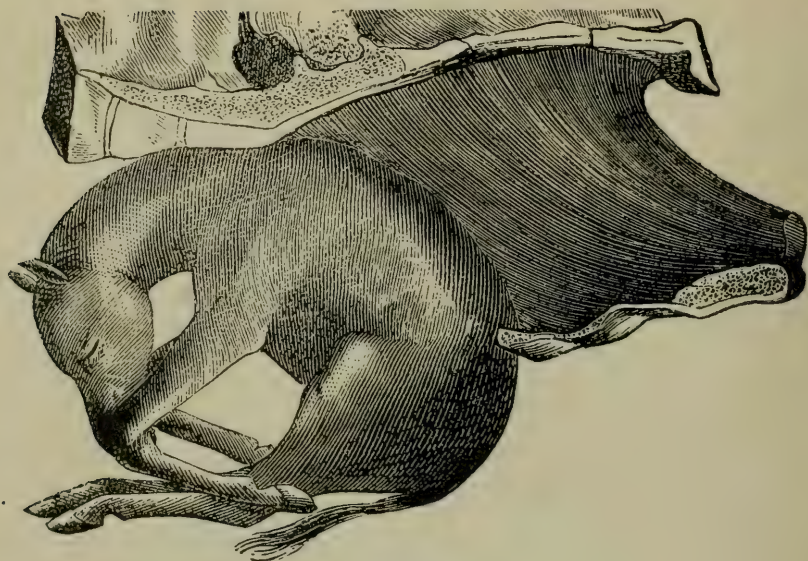


FIG. 52

CEPHALO-SACRAL POSITION OF THE FOETUS.

This position can hardly be changed into normal without the aid of instruments and a skillful veterinarian.

As it is almost impossible for the layman to gain access, to either the head, or extremities, where he might possibly attach the rope or ordinary hooks in an attempt to turn the foetus. The human arm is not long enough to make a proper exploration of the existing conditions, therefore no time should be lost in calling in an expert. Even the most skilled veterinarian is not always successful in bringing about a favorable delivery in such cases, especially when the patient has been allowed to go unattended for a long time. The foetus very often dies before the owner's attention is aroused because the patient, as a rule, refrains from violent straining because of the unusual position of the foetus.

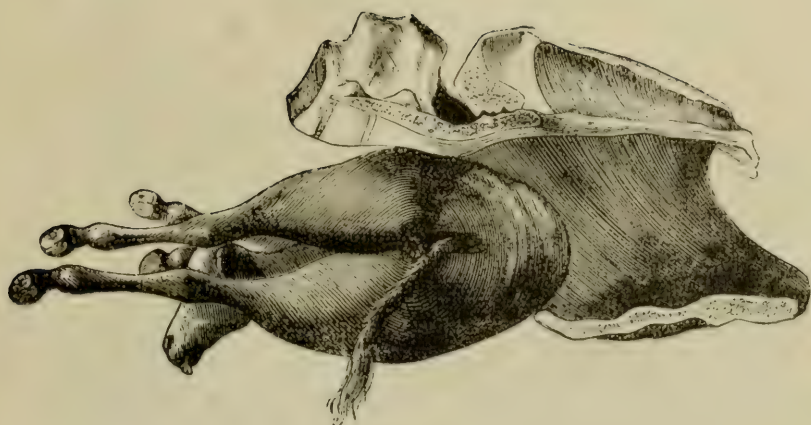


FIG. 53

Right Cephalo-iliac Position of the Foetus.

This position is also a very difficult one to deliver, but is considered a little more favorable than the one presented in fig. 52, as the operator is liable to reach the tail of the foetus more easily, by which he might be able to effect a material change in the position of the foetus. By manipulation of the same, he can very often hold his own until he gains access to one of the hind limbs, in which case the body of the foetus is pushed forward into the genital cavity of the dam, both of the posterior limbs drawn out and the youngster delivered backwards, viz., hind limbs and tail first.

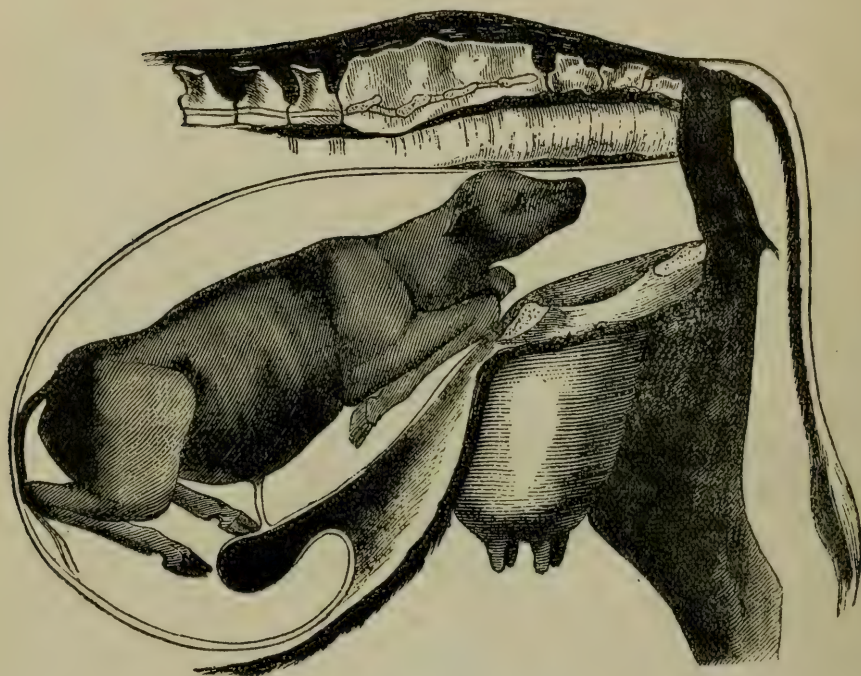


FIG. 54

Anterior Presentation—Forelimbs bent at the knee.

In this case it may be necessary to cut off the head in order to get both front feet in normal position.

This of course, is only necessary when the foetus is pretty well advanced into the pelvic cavity and it has become extremely difficult to repel the foetal body far enough to enable the operator to straighten out the front legs. After this has been done successfully, a hook should be fastened to the remaining skin around the neck by which the same can be directed and kept in the natural channel. Traction may now be applied to both fore limbs and the remaining part of the neck.

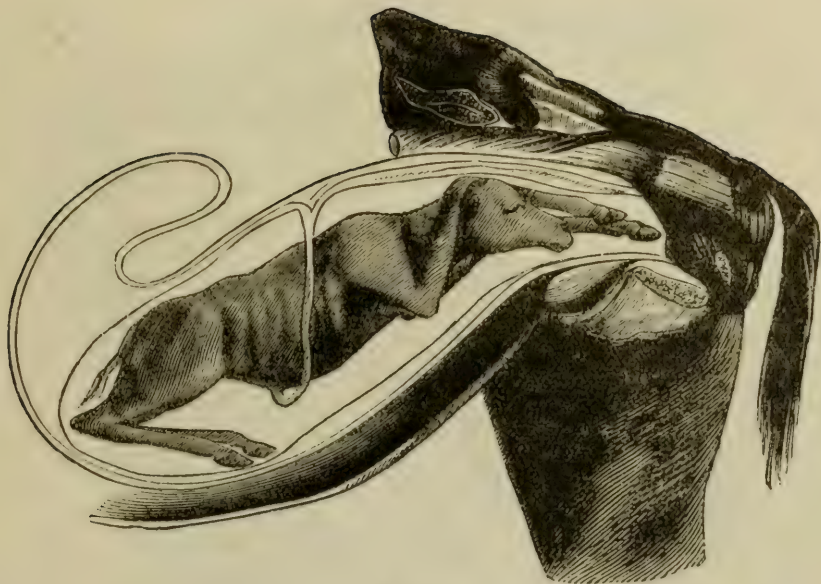


FIG. 55

Anterior presentation—Fore limb crossed over the neck.

In this presentation straighten out the crossed leg and apply traction.

Care must be taken that the head remains above the two fore limbs while traction is on, as it is very likely to slip back into its former unnatural position and help obstruct the natural channel through which it must pass quite easily if kept in proper place.

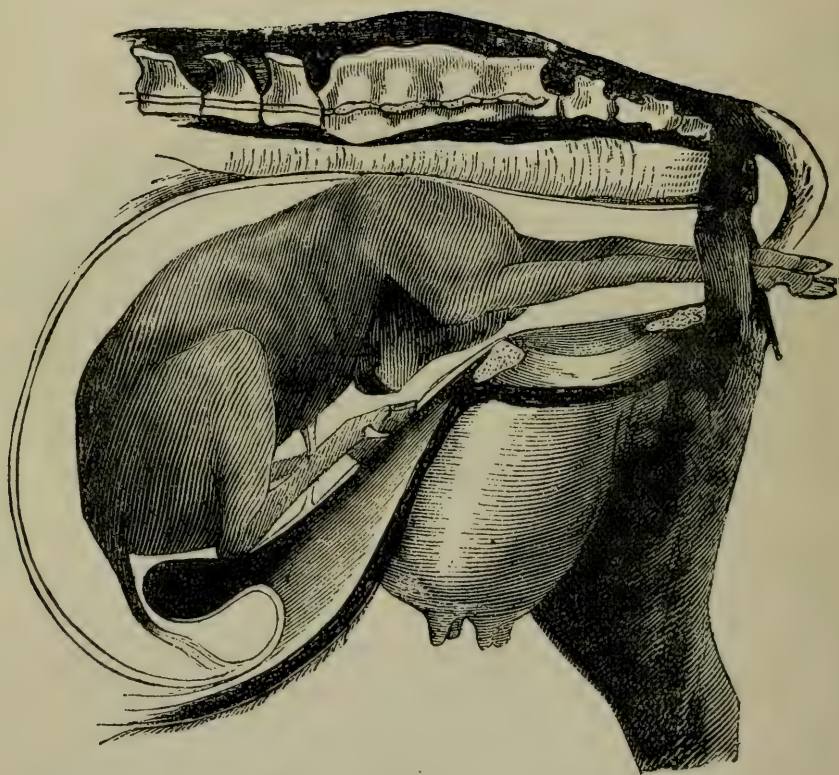


FIG. 56

Anterior Presentation—Extreme downward deviation of the head.

Secure both front legs with ropes, press the foetus back into the uterus far enough to bring the head into the natural channel. Then apply traction.

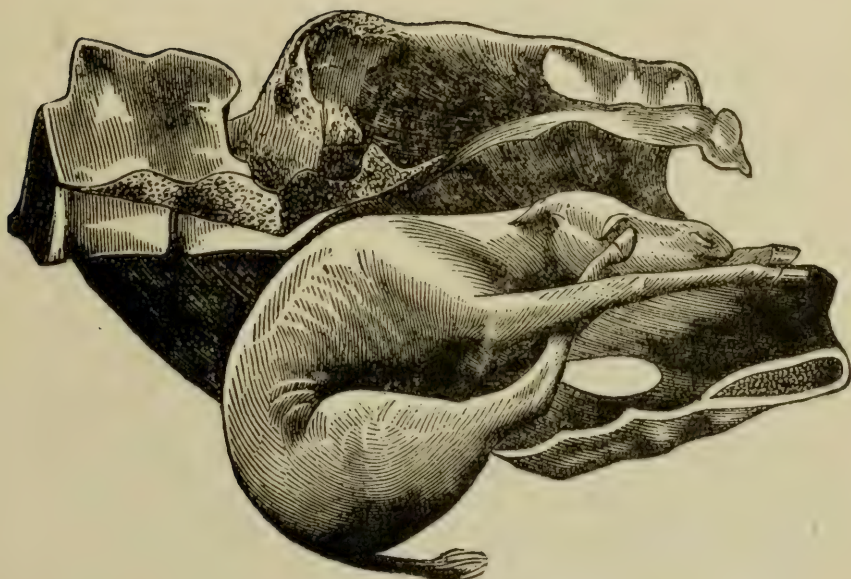
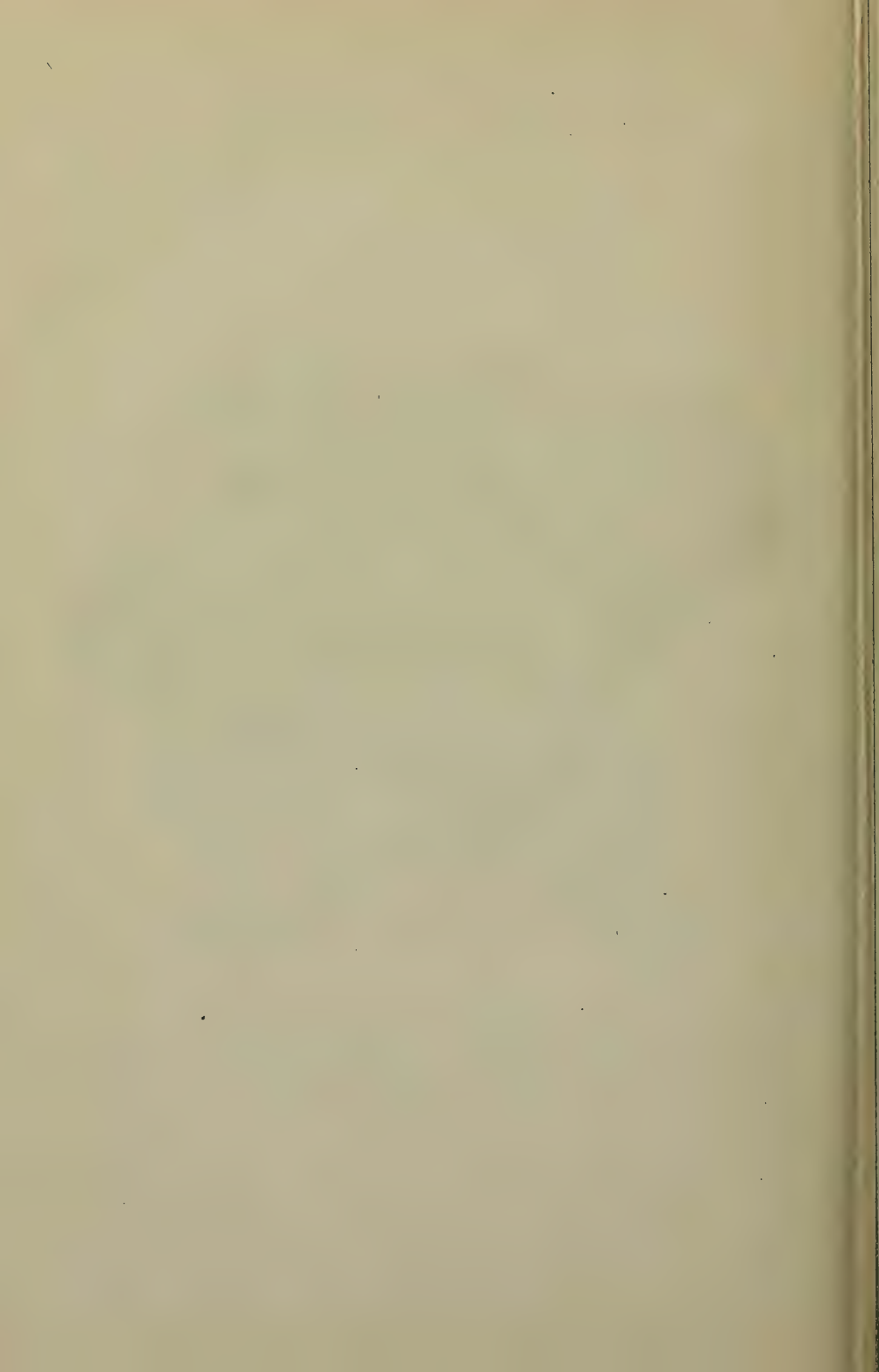


FIG. 57

Deviation of the hind-limbs in the pelvis in the anterior presentation.

Be sure to repel the hind leg back into the uterine cavity before you apply traction.

These are very often mistaken for the fore limbs and tend to confuse the operator, very often tempting him to attach his ropes to one hind and one fore limb, which will result in fatal termination, should you persist in applying forceful traction.



CHAPTER VIII.

Common Diseases of the Skin

ERYTHEMA

Acute inflammation of the skin, attended with eruptions and small pimples or pustules, common to all classes of horses in hot weather.

This is a congested or slightly inflamed condition of the skin, unattended by any eruption. The part is lightly swollen, hot, tender or itchy, and dry, and if the skin is white there is redness. The redness is effaced by pressure, but reappears instantly when the pressure is removed. Unless in transient cases the hair are liable to be shed. It may be looked on as the first stage of inflammation and therefore when it becomes aggravated it may merge in part or in whole into a papular, vesicular, or pustular eruption.

Erythema may arise from a variety of causes and is often named in accordance with its most prominent cause. Thus the chilling, or partial freezing, of a part will give rise to a severe reaction and congestion. Where snow or icy streets have been salted this may extend to severe inflammation with vesicles, pustules, or even sloughs of circumscribed portions of the skin of the pastern (chill-blain, frostbite). Heat and burning have a similar effect, and this often comes from exposure to the direct rays of the sun. The skin that does not perspire is the most subject and hence the white face or white limb of a horse becoming dried by the intensity of the sun's rays often suffers to the exclusion of the rest of the body (white face and foot disease). The febrile state of the general system is also a potent cause, hence the white-skinned horse is rendered the more liable if kept on a heating ration of buckwheat, or even of wheat or maize. Contact of the skin with oil of turpentine or other essential oils, with irritant liquids, vegetable or mineral, with rancid fats, with the acrid secretions of certain animals, like the irritated toad, with pus, sweat, tears, urine, or liquid feces, will produce congestion or even inflammation. Chafing is a common cause, and is especially liable to affect the fat horse between the thighs, by the side of the sheath or scrotum, on the inner side of the elbow, or where the harness chafes on the poll, shoulder, back, breast-bone, and under the tail. The accumulation of sweat and dust between the folds of the skin and on the surface of the harness, and the specially acrid char-

acter of the sweat in certain horses contribute to chafing or "intertrigo." The heels often become congested, owing to the irritation caused by the short bristly hair in clipped heels. Again, congestion may occur from friction by halter, harness, or other foreign body under the pastern, or inside the thigh or arm, or by reason of blows from another foot (cutting, interfering, overreach). Finally, erythema is especially liable to occur in spring when the coat is being shed, and the hair follicles and general surface are exposed and irritable in connection with the dropping of the hair.

If due only to local irritant, congestion will usually disappear when such cause has been removed, but when the feeding or system is at fault these conditions must be first corrected. While the cost is being shed the susceptibility will continue, and the aim should be to prevent the disease developing and advancing so as to weaken the skin, render the susceptibility permanent, and lay the foundation of persistent or frequently recurring skin disease. Hence at such times the diet should be nonstimulating; any excess of grain and above all of buckwheat, Indian corn, or wheat being avoided. A large grain ration should not be given at once on return from hard work, when the general system and stomach are unable to cope with it; the animal should not be given more than a swallow or two of cold water when perspiring and fatigued; nor should he be allowed a full supply of water just after his grain ration; he should not be overheated, or exhausted by the harness pressing on the skin. The exposure of the affected heels to damp, mud and snow, and, above all, to melting snow, should be guarded against; light, smooth, well-fitting harness must be secured, and where the saddle or collar irritates an incision should be made in them above and below the part that chafes, and, the padding between having been removed, the lining should be beaten so as to make a hollow. A zinc shield in the upper angle of the collar will often prevent chafing in front of the withers.

TREATMENT

Wash the chafed skin and apply a salt and water solution consisting of one-half ounce of salt to each quart of water, camphorated spirits, or a weak solution of oak bark. If the surface is raw, dust over with starch and smear with Dermasote Ointment. To relieve the constitutional disturbance give one to two tablespoonfuls of Sanguitone (National) in moist food three times daily. This is usually followed by a rapid recovery. You should notice a marked improvement in from 48 to 70 hours.

SCALY SKIN DISEASE (Pityriasis)

This affection is characterized by an excessive production and detachment of dry scales from the surface of the skin (dandruff). It is usually dependent on some fault in digestion and an imperfect secretion from the sebaceous glands, and is most common in old horses with spare habit of body. Williams attributes it to food rich in saccharine matter (carrots, turnips) and to the excretion of the skin of oxalic acid. He has found it in horses irregularly worked and well fed, and advises the administration of pitch for a length of time and the avoidance of saccharine food. Otherwise the horse may take two or three ounces of Bovolax in moist food three times daily to relax the bowels. Then follow with one to two tablespoonfuls of Sanguitone (National) in moist food twice or three times daily until the patient has made a complete recovery.

BARNYARD ITCH (Ring Worms)

Barnyard itch, often called ringworms, usually appears as white scurfy abrasions around the eyes, neck, shoulders and sometimes the bodies of young stock during the winter and spring.

TREATMENT

The parts affected should be cleaned with a stiff brush, warm water and soap. When dry, rub well with Dermasote. Repeat in a week or ten days if necessary. Usually one application is sufficient for a complete cure. Dermasote is non-irritating and non-poisonous. Therefore, it is absolutely safe to apply without fear of poisoning animals when licking each other.

ITCH IN HORSES

Itching is due to one of two causes. First, there may be a parasite on the skin, such as ordinary lice or intradermal parasites which irritate the skin and bring about the itching. It may be due to a humor in the blood, such as erythema or eczema. If it be the former, a two per cent solution of lysol should be applied to the entire surface which appears to be affected, twice or three times a

week. The hair should be thoroughly soaked to the skin so as to come in direct contact with the offending parasites. This will afford immediate relief, if due to the first cause. If from the second cause, the animal should be given a saline purgative such as a pound of Bovolax dissolved in a quart of warm water. Give one pint as a drench morning and night. Then give one tablespoonful of Sanguitone in moist food three times daily.

NETTLE RASH (Urticaria or Surfeit)

This is a mild inflammatory affection of the skin affecting cattle and horses most frequently, characterized by a sudden development of patches of various sizes from that of a nickel to one as large as the hand. The patches of raised skin are marked by an abrupt border and are irregular in form. All the swelling may disappear in a few days, or it may go away in one place and reappear on another part of the body. It is always accompanied by a great desire to rub the affected part. In the simplest type, as just described, it is never followed by any serious exudations or eruptions, unless the surface of the skin becomes abraded from scratching or rubbing.

CAUSES

Derangement of the digestive organs are the most common causes, such as overloading the stomach when the animal is turned out to graze in the spring, certain constituents of food, and high feeding among fattening stock. When the kidneys are functionally deranged urticaria may appear. Spinal irritation and other nervous affections may cause it. The disease consists of a paralysis of the nerve ends that control the volume of the capillary vessels in certain areas of skin, thus permitting the vessels to expand and their contents in part to exude, producing a soft, circumscribed swelling.

TREATMENT

Dissolve a pound package of Bovolax in a gallon of warm water. Give a quart as a drench every three hours. Then follow with a teaspoonful of Sanguitone in moist food three times daily for a week or ten days. This dose is for adult horses or cattle; for smaller animals, give smaller doses according to size and age.



Typical case of urticaria after the usual swellings of the muzzle and eyes have disappeared.

SCRATCHES (Mud Fever)



Scratches.

Scratches, also known as erythema and mud fever, are usually due to a humor in the blood which breaks out at the fetlock because this part of the limb is most exposed to moisture and filth, which, acted upon by the cold air, cause eruptions of the skin and possible infection. Considerable fever and swelling will be noticed; then skin eruptions take place. The animal usually starts out lame and the parts are very sensitive to the touch.

Grease Leg is a term applied to chronic cases of Scratches or Mud Fever. This is the result the owner or attendant neglecting to relieve the patient by giving proper treatment or applying irritants, such as liniments or blisters. The erroneous idea of applying filthy cow dung instead of clean poultices will cause the growth of clusters or tumor, like growths resembling grapes, which are painful to the patient and throw out an offensive, amber-colored fluid. In later stages grease leg often turns into big leg or Elephantiasis.

TREATMENT

Wash the parts clean with soap and warm water. Rub dry and apply Elk's Dermasote. Rub it freely into the wounds, then apply a warm linseed poultice over the entire fetlock. Repeat this twice daily until the swellings disappear. Give the horse a tablespoonful of Bovolax in moist food three times daily for three days. Then discontinue the Bovolax and give a teaspoonful of National Alterative Powders instead until the scratches have entirely disappeared. This treatment is very effective and inexpensive.

MANGE ON HORSES, CATTLE OR DOGS

This consists of chronic eruptions of the skin, causing the hair to fall out and leaving a somewhat raw surface of the skin with a discharge of sticky substances attended by an offensive odor. The parts affected are exceedingly itchy and sensitive.

TREATMENT

This condition is caused by a humor in the blood and therefore such treatment must first be given as acts directly on the circulation. For this purpose give one tablespoonful of Sanguitone in food twice or three times daily to adult horses or cattle, giving smaller animals less, according to their size and age. Sanguitone is prepared especially for these troubles and therefore gives most satisfactory results. The surface of the affected parts should be washed clean with soap and warm water. When dry, rub well with Dermasote once daily until the itching ceases and the hair is restored.

BOILS OR FURUNCLES

These may appear on any part of the skin, but are especially common on the lower parts of the limbs, and on the shoulders and back where the skin is irritated by accumulated secretion and chafing with the harness. In other cases the cause is constitutional, or attended by unwholesome diet and overwork with loss of general health and condition. They also follow on weakening diseases, notably strangles, in which irritants are retained in the system from overproduction of poisons and effete matters during fever, and imperfect elimination. There is also the presence of a pyogenic bacterium, by which the disease may be maintained and propagated.

While Boils are pus-producing, they differ from simple postule in affecting the deepest layers of the true skin, and even the superficial layers of the connective tissues beneath, and in the death and sloughing out of the central part of the inflamed mass (core). The depth of the hard, indurated, painful swelling, and the forma-

tion of this central mass or core, which is bathed in pus and slowly separated from surrounding parts serve to distinguish the boil alike from the pustule, from the farcy bud, and form a superficial abscess.

TREATMENT

To treat very painful boils a free incision with a lancet in two directions, followed by a dressing with one-half an ounce carbolic acid in a pint of water, bound on with cotton wool or lint, may cut them short. The more common course is to apply a warm poultice of linseed meal or wheat bran, and renew daily until the center of the boil softens, when it should be lanced and the core pressed out.

If the boil is smeared with Elk's Desicant and a poultice put over it, the formation of matter and separation of the core is often hastened. A mixture of sugar and soap laid on the boil is equally good. Cleanliness of the skin and the avoidance of all causes of irritation are important items, and a teaspoonful of Sanguitone Compound once or twice a day will sometimes assist in warding off a new crop.

CONGESTION (With small Pimples or Papules)

In this affection there is the general blush, heat, etc., of erythema, together with a crop of elevations from the size of a poppy seed to a coffee bean, visible when the hair is reversed or to be felt with the finger where the hair is scanty. In white skins they vary from the palest to the darkest red. All do not retain the papular type, but some go on to form blisters (eczema, bullae) as pustules, or dry up into scales, or break out into open sores, or extend into larger swelling (tubercles). The majority, however, remaining as pimples, characterize the disease. When very itchy the rubbing breaks them open, and the resulting sores hide the true nature of the eruptions.

The general and local causes may be the same as for erythema, and in the same subject one portion of the skin may have simple congestion and another adjacent papules. As the inflammatory action is more pronounced, so the irritation and itching are usually greater, the animal rubbing and biting himself severely. This itching is especially severe in the forms which attack the roots of the

mane and tail and there the disease is often so persistent and troublesome that the horse is rendered virtually useless.

The bites of insects often produce a papular eruption, but in many cases the swelling extends wider into a button-like elevation, one-half to an inch in diameter. The same remarks apply to the effects of the poison ivy and poison sumac.

TREATMENT

In papular eruptions first remove the cause, then apply the same general remedies as for simple congestion. In the more inveterate cases use a lotion of one-half ounce sulphide of Potassium in two quarts of water to which a little Castile soap has been added; or wash with one-half ounce oil of tar, 2 ounces Castile soap and 20 ounces water.

INFLAMMATION WITH BLISTERS (or Eczema)

In this the skin is congested, thickened, warm (white skins are reddened), and shows a thick crop of little blisters formed by effusions of a straw-colored fluid between the true skin and the cuticle. The blisters may be of any size from a millet seed to a pea, and often crack open and allow the escape of the fluid, which concretes as a slightly yellowish scab or crust around the roots of the hairs. This exudation and incrustation are especially common where the hair are long, thick, and numerous, as in the region of the pastern of heavy draft horses. The term eczema is now applied very generally to eruptions of all kinds that depend on internal disorders or constitutional conditions, and that tend to recurrences and inveteracy. Eczema may appear on any part of the body, but in horses it is especially common on the heels and the lower parts of the limbs, and less frequently on the neck, shoulder, and abdomen. Their limbs appear to be especially liable because of their dependent position, all blood having to return from them against the action of gravity, and congestions and swellings being common, because of the abundance of blood vessels in this part of the skin, and because of the frequent contact with the irritant dung and urine and their ammoniacal emanations. The legs further suffer from contact with wet and mud when at work, from snow and ice, from drafts of cold air on the wet limbs, from washing with caustic soaps,

from the relaxing effects of a too deep and abundant litter. Among other causes may be named indigestion and the presence of irritant matters in the blood and sweat, the result of patent medicated foods and condition powders (aromatics, stimulants), green food, new oats, buckwheat, wheat, maize, diseased potatoes, smut, or ergot in grains, decomposing green food, brewers' grains, or kitchen garbage. The excitement in the skin, caused by shedding the coat, lack of grooming, hot weather, hot boiled or steamed food, conduces to the eruption. Lastly, any sudden change of food may induce it.

The blisters may in part go on to suppuration so that vesicles and pustules often appear on the same patch, and when raw from rubbing the true nature of the eruption may be completely mashed. In high-fed horses, kept in close stables with little work, eczema of the limbs may last for months and years. It is a very troublesome affection in draft stallions.

TREATMENT

This disease is so often the result of indigestion that a laxative of one-half pound Bovolax dissolved in a quart of warm water and given in two doses four hours apart is often demanded to clear away the irritants from the alimentary canal. A quart of raw linseed oil may be necessary in addition to the above in obstinate cases. In debilitated cases one to two teaspoonfuls of Sanguitone given in food twice or three times daily will help tone the system. Cleanliness and good hygiene of the skin during the treatment and for some time after is absolutely necessary.

SUMMER SORES IN HORSES

Summer Sores are said to be parasitic in their nature. In India they are termed *Bursattee*. The disease is shown by sores on the skin, at the fetlock, sheath, face, lips and front of the chest; at the beginning the sores are red and unhealthy looking, sometimes nearly a foot in diameter, are often kept moist by the discharge. In the sores are often found little pea-shaped hard, yellowish bodies. The sores heal of their own accord in cold weather. In accordance with the idea of parasitic origin, strong antiseptics should be used, carbolic acid full strength, *one application only*, later paint on camphor one part to carbolic acid two and one-half parts. The applica-

tion of one of the following after the sore begins to look healthy will be all that is needed, in addition to preventing any irritation.

Carbolic Acid	1 ounce
Resin	1 ounce
Camphor	5 ounces
Methylated Spirits	15 ounces

or

Iodofoam	1 dram
Oil of Eucalyptus	1 ounce

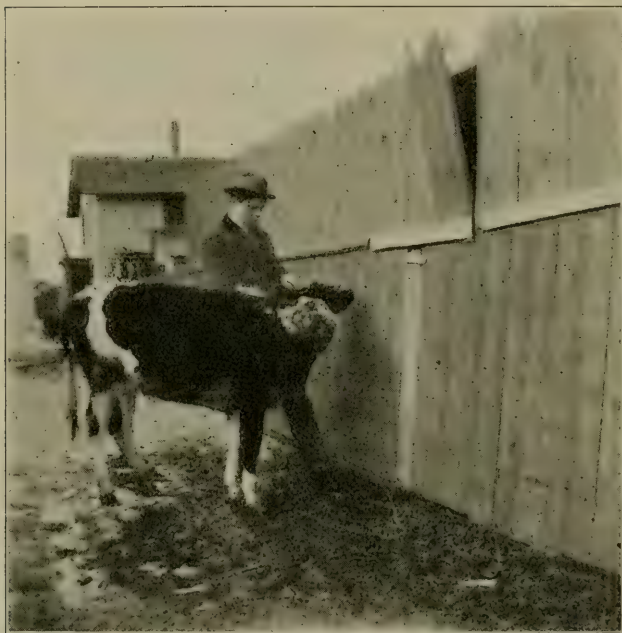
Keep the sore covered with the drugs until healed.

CHAPPED TEATS

These may be caused by anything which irritates the teats. The powerful sucking of the calf; the sudden chilling of the teat in winter after the calf has just let it go, or after the completion of milking with a wet hand; contact with cold water, or stagnant, putrid water, or with filth or irritants when lying down; slight congestions of the skin in connection with overstocking; indeed, any source of local irritation may cause chapping. This may be slight or extend into great, gaping sores and induce retention of milk or even mammitis.

TREATMENT

Wash the teats and all chapped parts clean with soap and water after each milking. Dry with a towel; then apply Elk's Glycerole rubbing it in well. This will make the teats pliable, relieve the soreness, and bring about speedy healing of the chapped and sore parts.

WARTS (Papillomata)

Papillomata (warts).

Warts are more or less common on all classes of stock. If flat on the skin may be touched with strong acetic acid or silver nitrate (lunar caustic). If they have a long neck, a horse hair or fine twine may be tied around the base when they will eventually drop off. Larger warts, like those shown in the above illustration may easily be twisted off with your thumb and fingers, or an ordinary pair of pincers will do. Keep the skin clean and touch up with caustics as above mentioned.

CHAPTER IX.

Contagious and Infectious Diseases

TUBERCULOSIS

THE DIAGNOSIS OF TUBERCULOSIS

The symptoms of tuberculosis in cattle are not sufficiently prominent, except in advanced stages or when superficially located, to enable one to diagnose this disease by the ordinary methods of physical examination, and the cattle may, without showing any clinical symptoms, be in such a stage of tuberculosis as to render them capable of spreading disease. Indeed, an animal may be fat and sleek, eat and milk well, have a bright, glossy coat and be apparently in the pink of condition, and still be passing tubercle bacilli through the feces or by an occasional cough, and thus endanger all the healthy cattle in the herd. Consequently, advantageous aids to diagnosis as animal inoculation, biological tests, serum agglutination reaction, and the tuberculin test are made use of in arriving at a definite opinion relative to the presence or absence of this disease. The value of all but the last of these is discounted by the technique required and by their impracticability, while the tuberculin test is most satisfactory and is the best diagnostic agent known for the disease.

THE ORIGIN OF THE TUBERCULIN TEST

Tuberculin was invented by Koch in 1890 and was first used experimentally in treating tuberculosis in man. In these cases it was observed that its injection was followed by a rise of temperature, which led veterinarians to apply tuberculin to suspected animals to see if a similar reaction resulted. Numerous experiments showed this to be the case, and since 1891 the use of tuberculin as a diagnostic agent for tuberculosis of cattle has been almost universally adopted in all parts of the civilized world. No one thinks of accepting tuberculin as an absolutely infallible agent, but it is immeasurably more dependable than any other method that has ever been used.

THE NATURE AND APPLICATION OF TUBERCULIN TEST

Tuberculin is the sterilized and filtered glycerin extract of cultures of tubercle bacilli. It contains cooked products of the growth of these bacilli, but not the bacilli themselves. Consequently, when this substance is injected under the skin of any animal it is absolutely unable to produce the disease, cause abortion, or otherwise injure the animal. In case the injected animal is tuberculous, a decided rise of temperature will follow the use of tuberculin.

In practice the tuberculin test is applied by first taking a sufficient number of temperatures, usually three, at intervals of two hours, to ascertain the normal variation of temperature of the animal to be tested. The dose of tuberculin (which should always be specified on the label) is then injected hypodermically between 8 and 10 p. m. on the day of taking the preliminary temperatures. On the following day the "after" temperatures are recorded every two hours, beginning at 6 a. m. and continuing until twenty hours following the injection.



Typical tubercular heifer.

Photo by author.



Lungs showing lesions of generalized tuberculosis from same heifer.

Photo by Author.

THE VALUE AND RELIABILITY OF THE TUBERCULIN TEST

As a result of this method an accurate diagnosis may be established in over 97 per cent of the cases tested. The relatively few failures in diagnosis are included among two classes of cattle. The first class contains those that are tuberculous, but which do not react, either because of the slight effect of an ordinary sized dose of tuberculin, or an advanced case of the disease with so much natural tuberculin already in the system; or on account of a previous test with tuberculin which produces a tolerance to this material lasting for about six weeks. The second class includes those that

are not tuberculous, but which show an elevation of temperature as a result of (1) advanced pregnancy; (2) the excitement of oestrus; (3) concurrent diseases, as inflammation of the lungs, intestines, uterus, udder, or other parts, abortion, retention of afterbirth, indigestion, etc; (4) inclosure in a hot, stuffy stable, especially in summer, or exposure to cold drafts or rains; or (5) any change in the method of feeding, watering, or stabling of the animal during the test.

Notwithstanding all these possibilities of error, the results of thousands of tests show that in less than 3 per cent of the cases tested do these failures actually occur. In the first class, the chances of error are decidedly reduced by the skilled veterinarian by making careful physical examination and diagnosing these advanced cases, and by the injection of double or triple doses into all recently tested cattle, with the taking of the "after" temperatures beginning two hours following the injection and continuing hourly for twenty hours. The second class: Errors are avoided by eliminating those cases from the test that are nearing parturition or are in heat, or show evidence of the previously mentioned diseases, or exhibit temperatures sufficiently high to make them unreliable for use as normal. Then, in reading "after" temperatures it is advisable not to recognize as a reaction an elevation of temperatures less than 2° F., or one which at the same time does not go above 103.8° F., and the temperatures reaction must likewise have the characteristic rainbow curve. (Those cases which approximate, but do not reach this standard should be considered as suspicious and held for a retest six weeks later.) In addition, a satisfactory tuberculin must be used, also an accurate thermometer and a reliable syringe in order that a sufficient dose of tuberculin may be given. Finally, the number of apparent errors or the tuberculin test will be greatly diminished if a careful post mortem examination is made, giving especial attention to the lymph glands.

This low percentage of failures being the case, cattle owners should welcome the tuberculin test, not only for their own interest, but for the welfare of the public as well. Where this method of diagnosing the disease has been adopted, tuberculosis is gradually being eradicated, while it is spreading rapidly and becoming widely disseminated in those districts where the tuberculin test has not been employed. Without its use the disease cannot be controlled and the cattle owner is confronted with serious and continuous losses; with its use the disease can be eradicated from the herd; a clean herd established and the danger of its spread to man removed. Tuberculin may, therefore, be considered a most beneficial discovery for the stock raiser. Strange to say, many of these men have

been incredulous, antagonistic, or prejudiced against the tuberculin test by misinterpreting published statements, by incorrect unsubstantiated, or exaggerated reports, and by alleged injurious effects to healthy cattle.

Law has clearly stated the question when he says:

"Many stock owners still entertain an ignorant and unwarranted dread of the tuberculin test. It is true that when recklessly used by ignorant and careless people it may be made a root of evil, yet as employed by the intelligent and careful expert it is not only perfectly safe, but it is the only known means of ascertaining approximately the actual number of affected in a given herd. In most infected herds, living under what are in other respects good hygienic conditions, two-thirds or three-fourths are not to be detected without its aid, so that in clearing a herd from tuberculosis, and placing both herd and products above suspicion, the test becomes essential.

"In skilled hands the tuberculin test will show at least nine-tenths of all cases of tuberculosis when other methods of diagnosis will not detect one-tenth."

It is perfectly natural that there should be objection to its use among those who are not acquainted with its method of preparation or its properties, but it is difficult to explain the antagonism of farmers who are familiar with the facts connected with the manufacture and use of tuberculin. Probably the most popular objection to tuberculin is that it is too searching, since it discovers cases in which the lesions are small and obscure. While this fact is admitted, it should also be borne in mind that such a small lesion to-day may break down and become widely disseminated in a relatively short period. Therefore, any cow affected with tuberculosis, even to a slight degree, must be considered as probably dangerous, not only to the other animals in the herd, but also to the consumer of her products. In connection with the above test, tuberculin is now applied to the eye and injected interdermally to aid in diagnosing tubercular subjects.



A mad cow.—Photo by author.

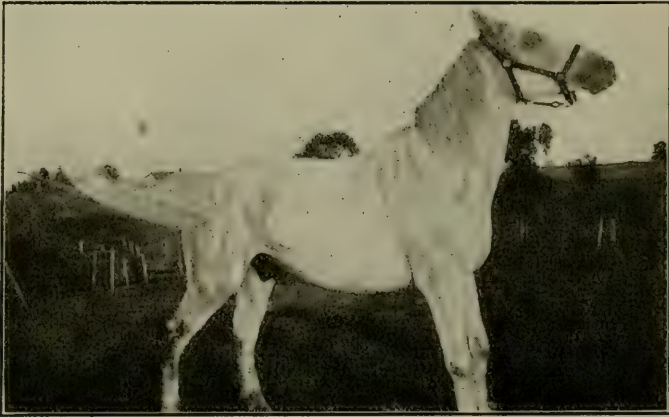
RABIES IN DOGS AND CATTLE

Before taking up in detail the study of the phenomena of Rabies it is well to review briefly the salient features which combine to distinguish it.

Rabies is an ancient and widespread disorder perpetuated among the lower animals, chiefly the dog family, transmitted in nature to other animals and to man by the inoculation of virulent saliva through bites. It is undoubtedly caused by a living micro-organism, which invades the nervous system, rendering it virulent and inducing the symptoms. The period of inoculation is variable, but relatively long, usually between 21 days and two months. The symptoms are referable to excitation and finally depression of the central nervous system by the micro-organism or its products, with ultimate destruction of its functioning power. A general increase of reflex excitation is early noted. The centers for respiration and deglutition are especially severely attacked, with spasms or paralysis as a result. General convulsions of central origin frequently occur, paralysis of spinal origin may attack the extremities. The physical functions are disturbed in degrees varying in their manifestations from morbid anxiety to delirium and mania. Pathological changes of a characteristic nature are confined principally to the nervous system. The disease is essentially the same in all of the many species of animals that are susceptible. Protection is afforded by inoculation with attenuated rabies virus and to some extent by antirabic serum and so far as known, by no other means. The blood serum of immunized persons and animals possess specific properties against rabies virus. Once developed, the disease is almost uniformly fatal. No other diseases presents these characters in combination.

TREATMENT

As a result of recent experiments, scientists claim that when an animal or man has been bitten by a rabied dog or other affected animal, the immediate application of Tincture of Iodine inserted deeply into the wound will prevent the germs from growing, thus preventing infection and the consequent development of the disease. Some authorities go so far as to claim this to be a specific preventative.



Last stage of Tetanus in a horse.—Photo by author.

LOCKJAW (Tetanus)

Lockjaw or tetanus is an infection due to a specific germ, (*Bacillus Tetanus*), which gains access to the circulation through wounds of some kind, most frequently through a nail-prick or other small wounds caused by a small sharp instrument, which does not make a large wound and closes after the instrument is withdrawn. Thus the germs are inclosed and usually develop in such large numbers that they bring about the rigid tetanic condition of the body shown above, in about twenty-one days. Some cases developing after the twenty-first day are usually much milder than those which develop before. Some cases develop sooner and some later.

TREATMENT

When a horse steps on a nail, the wound should be opened freely after the nail has been extracted, in order to give access of air and free drainage. Tetanus germs cannot propagate unless air and sunlight are excluded. Vaccinate the animal with Tetanus Vaccine (from 500 to 1,000 units) and thoroughly disinfect the wound with a solution of *Lotio Vita*. Many a valuable animal which has been doomed to death has been saved in this way. In every case the patient should be kept quiet in a dark, comfortable stall.

LUMP JAW (Actenomicosis)

Lump Jaw is due to a specific germ which gains access to the animal body through the food. It is communicable from one animal to another when the lumps, which form in the region of the lower jaw, break open and discharge pus containing the live germs. If this happens while the animal is in the pasture grazing and the pus trickles on the ground during the natural movements of the jaw, other cattle following will eat the grass containing the pus and thus introduce the germ, which finds its way to the glands in the submaxillary space where the pus sack or lump is formed after which the disease is commonly named.

TREATMENT

The treatment consists in opening the pus sacks and squeezing out the pus, after which the sack should be washed clean and Elk's Absorbing Ointment rubbed in freely to absorb the sack and kill germs which might remain. Repeat in three or four days. This is a satisfactory treatment in all early cases, but if the lump has become chronic, viz.: If it has broken open on its own accord and closed several times, the above treatment must be repeated until the entire bunch disappears.

COW POX

This is a form of contagious inflammation of the udder which does not spread readily from animal to animal, except by the hands of the milker. It is said to occur spontaneously in the cow, but this is altogether improbable. It is not uncommon in the horse, attacking the heels, the lips, or some other inoculated part of the body and is then easily transferred to the cow if the same man grooms and dresses the horse and milks the cow. It may also appear in the cow by infection, more or less direct from a person who has been successfully vaccinated. Many believe that it is only a



A typical case of cow-pox.—Photo by author.

form of the smallpox of man, modified by passing through the system of the cow.

SYMPTOMS

The disease in the cow is ushered in by a slight fever, which, however, is usually overlooked and the first sign is tenderness of the teats. Examined, these may be redder and hotter than normal and at the end of two days there appear little nodules like small peas, of a pale red color and increasing so that they may measure three-fourths of an inch to one inch in diameter by the seventh day. The yield of milk diminishes and when heated it coagulates slightly. From the seventh to the tenth day the eruption forms into a blister with a depression in the center and raised margins, from which the

whole of the liquid cannot be drawn out by a single puncture. The blister, in other words, is chambered and each chamber must be opened in order to evacuate the whole of the contents. If the pock forms on the surface where there is thick hair, it does not rise as a blister, but oozes out a straw-colored fluid which concretes on the hair in an amber-colored mass. In one or two days after the pock is full it becomes yellow from contained pus and then dries into a brownish, yellow scab (See Illustration), which finally falls, leaving one or more distinct pits in the skin. Upon the teats, however, this regular course is rarely seen; the vesicles are burst by the hands of the milker as soon as liquid is formed and as they continue to suffer at each milking, they form raw, angry sores, scabbing more or less at intervals, but slow to undergo healing.

TREATMENT

The only treatment is to heal the sores and to relieve the cow of the painful torture of milking. To do this effectively wash the udder and teats clean with warm water and castile soap after each milking. See that no soap-suds remain on udder or teats, then dry thoroughly with a clean, dry towel. When the parts are thus cleansed and dried, rub well with Glycerole (National) all affected parts. This will tend to relieve the pain at once, soften the skin, and hasten repair. It will surprise you how much more gentle the cow will appear at the next milking, even after only one application. Repeat the above until the pox disappear and always milk the affected cows last so that you do not carry the germs to the healthy ones of the herd, care being taken to have the hands of the milker thoroughly clean.

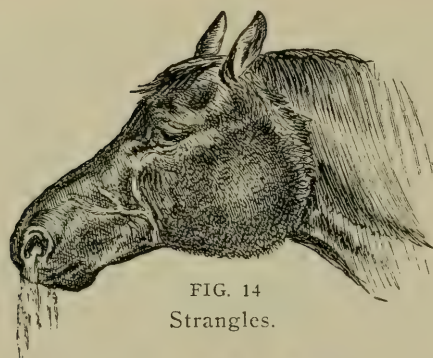


FIG. 14
Strangles.

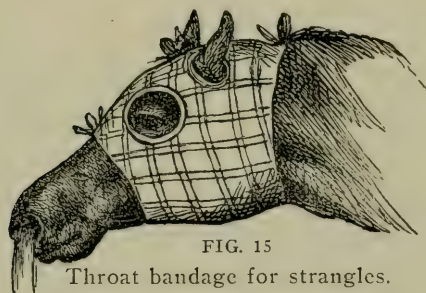


FIG. 15
Throat bandage for strangles.



Blood poison following a neglected case of strangles.

STRANGLES (Horse Distemper)

(See Fig. 14, opposite page.)

Horse distemper or strangles is due to a specific germ which gains access to the blood by the horse coming in contact with other infected horses, drinking out of the same vessels or rubbing its nose on a post or manger where the discharge of an infected horse has been deposited. This disease is the fore-runner of many more serious diseases than strangles itself. The germ particularly attacks the red corpuscles of the blood, which causes a general weakness of the system to such an extent that it cannot resist other diseases.

TREATMENT

(See Fig. 15, opposite page.)

Distemper can be prevented by vaccination. Just as soon as one of your horses show signs of distemper, all the rest should be immediately vaccinated and all the animals given a teaspoonful of Sanguitone twice or three times daily. This gives the well animals resisting power and hasten the recovery of the sick. When a swelling appears in the throat a liberal application of Elk's Dessicant should be well rubbed into the skin of the affected parts once daily until the swelling breaks open and discharges. Then the wound should be kept clean with soap and warm water. A warm linseed poultice may then be applied twice daily to hasten suppuration and terminate the disease. To apply poultice, a bandage as shown below will greatly aid in keeping the poultice in place.

INFLUENZA

Influenza is a very wide term applied to epizootics of the horse. *Pink Eye* is one form of the disease. *Stockyard Fever*, so-called is another form. This disease is more or less serious, depending to a great extent on the health of the animal and the healthiness of its surroundings. It may be set down as a general rule that a horse off feed should *not* be worked, and if the clinical thermometer shows a fevered condition in the animal the veterinarian should be consulted. Partial or complete loss of appetite, fever, great nervous depression, partial loss of control of the limbs, constipation, slimy feces, discharges from the eyes, cough, sore throat, swelling of the limbs, sheath and along the belly, and occasionally a nasal discharge are all common symptoms of influenza; a serious result in pregnant mares is abortion, few carry their foals the full time. The duration

of the disease is usually six to ten days if uncomplicated ; a constant watch must be kept for lung or blood complications. Give good food, pure air, sunlight, etc., avoid drafts.

TREATMENT

To prevent this trouble the entire herd or inmates of a stable should be vaccinated after the disease has broken out in the stable or neighborhood. If an animal is once affected, we can give the system resistance and guard against evil results by giving in moist food three times daily one teaspoonful of Sanguitone Compound until the patient has safely recovered. Alcoholic stimulants may be added to hasten, or bring about a speedy recovery.

CONTAGIOUS EYE DISEASE IN CATTLE

This disease, technically termed contagious keratitis, sometimes termed *Pink Eye* of cattle, is in some localities and at some seasons quite a common disease ; usually it appears in the summer or fall. One or both eyes may be affected ; the eyelids are swollen and closed and seem unable to bear the clear light ; there is a milky appearance of the front part of the eye, the corner, thus giving rise to the common idea that a scum is over it ; the darkest spot is often a yellow color, in the center. In some cases a purulent (mattery) discharge is present ; sometimes the contents of the eye escape and vision is thereby destroyed. The affected animal stops eating, cows will fail in their milk.

TREATMENT

Fortunately, the majority of cases recover completely under proper treatment, which is quite simple but effective. It is as follows : Separate all the affected cattle from the healthy ones, and give those affected the usual dose of Bovolax, place in a darkened stall and keep a clean cloth dampened with a solution of boracic acid, one ounce to a quart of clean water, containing a couple of ounces of laudanum or belladonna, over the eye, or else apply the solution mentioned once or twice daily. As many very bad cases recover, treatment should be persisted in. If the eye does not seem to clear, or an abscess forms, apply the following solution with a piece of clean cheese-cloth once daily. Mercury Ointment (Blue Ointment) to the eye twice a week for two weeks.

PERIODIC OPHTHALMIA

This disease is due to a parasite which gains access to the eye and affects the optic nerve and brings about symptoms of inflammation about once a month. The origin of the germ and the manner in which it obtains access to this organ is still unknown to scientists, but we do know, if taken in time, we very frequently succeed in destroying the troublesome agent of disease by keeping the horse in a dark place, bathing the eye with warm camomile tea and boric acid; taking about twenty grains of boric acid to a common teacupful of the tea and applying the same over the eye five or six times daily with a bandage, which is kept saturated with the solution. This will reduce the swelling and take out the greater part of the inflammation. Then you may take Mercury Ointment (Blue Ointment) one part, lanolin two parts, mix and rub into the eye and around the orbit once daily for three or four days, then rest and watch results. During the time you are making the external application, the animal should have one dram of Iodide of Potash in its drinking water twice daily, at least one hour before meals. Never give this medicine with the food, as you will get no results. Continue this for five or six days, then stop. This treatment is the most successful of any that is known to the writer for Periodic Ophthalmia, although the history of the disease would lead one to believe that medical treatment has not been very successful in the past.

FOOT-AND-MOUTH DISEASE (Aphthous Fever)

Foot-and-mouth disease is highly infectious, acute, febrile disease of cloven-footed animals, particularly cattle. Horses, dogs, cats, poultry, and even man may become infected. It is characterized by the formation of vesicles or blisters on the membrane of the mouth and on the skin between the toes and above the hoofs. The disease does not exist in the United States. Since it has broken out on several occasions, however, through infection from abroad, it is a disease with which every livestock owner should be familiar.

CAUSE

The cause of the disease is too small to be seen with a microscope and is known as a filterable virus. Transmission occurs by direct contact with infected animals or by any agency, such as man, other animals,

feed, animal products, etc., contaminated with discharges from affected animals.

SYMPTOMS

In sheep the lesions are more pronounced in the feet, the blisters being less well marked in the mouth than is the case in cattle. All four feet generally are the seat of small blisters, which form on the skin between the toes, on the heel, or around the top of the hoof. The animal is restless and kicks with the hind feet. Pain becomes intense, severe lameness is shown, and the animal rests on the knees or breast-bone in feeding or lies down most of the time. The blisters rupture, discharging a clear or yellowish fluid, which later may become cloudy or purulent. Frequently the hoof separates from the wall.

In the mouth small blisters form on the incisor pad, lips, tongue, cheeks, or hard palate. These rupture, discharging a clear fluid and leave small, reddened surfaces which heal rapidly. A considerable part of the membrane of the mouth may be cast off. The animal often makes a smacking sound or grinds the teeth.

Blisters may appear on the udder or teats. There is a general constitutional disturbance, diminished appetite, and loss of condition. The temperature rises at first and then drops to normal.

The disease runs its course in from two to three weeks, but is prolonged by severe foot lesions or by complications. The mortality is higher among lambs than among grown sheep.

DIAGNOSIS

Foot-and-mouth disease is readily recognized by the rapid spread of the disease in a flock, or to cattle and hogs, by the characteristic blisters on the feet or in the mouth and by the severe lameness in more than one foot. In foot rot of sheep, lameness is present in the affected foot; but in that case the lesions are in the form of ulcers, which usually develop at the heel and may extend deeply into the tissues, causing erosions which discharge a purulent matter. A pungent, disagreeable odor also is quite characteristic of foot rot.

TREATMENT

Medical treatment is not practiced in this country, as the danger that the disease will spread from an infected flock is too great. On each occasion when an outbreak has occurred slaughter of the affected herds as early as possible has prevented the disease from gaining a permanent foothold in the country. During outbreaks of foot-and-

mouth disease suspicious cases should be immediately reported by telegraph to the State livestock authorities or to the United States Bureau of Animal Industry.

SHEEP POX (*Variola Ovina*)

Sheep pox is an acute, infectious, eruptive disease of the skin, which spreads rapidly through a flock. It is prevalent in Europe, but is not known to exist in America.

CAUSE

Sheep pox is caused by a living, filterable virus, and is contracted principally by inhaling dust and air containing pox-scab material.

SYMPTOMS

The disease begins with high fever and general constitutional disturbance. Round, red spots appear on the parts of the skin which are free from or only lightly covered with wool. Papules soon develop on these spots and are succeeded by vesicles containing a yellowish or pale-red fluid. The vesicles later become pustules and then dry up, form a scab which is cast off. The animal gives off a peculiar sweetish repulsive odor. The disease lasts about three or four weeks, and the mortality, except in severe outbreaks, runs from 5 to 10 per cent.

TREATMENT

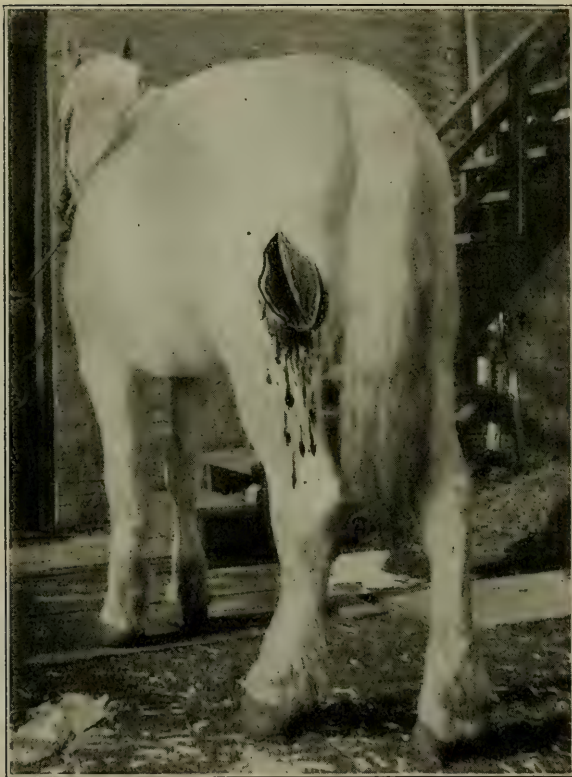
European authorities advise slaughter of the first animals affected. Preventive vaccination is successful, but is carried on under Government permit, because of the danger of spreading the disease.

ACTINOMYCOSIS (Lumpy Jaw, Wooden Tongue)

Actinomyces is a disease rare in sheep, caused by the ray fungus *Actinomyces bovis*, which forms cheesy tumors in the tongue. Occasionally the lips, jaws, or lungs may be affected.

TREATMENT

Give 2 grains of potassium iodid in the drinking water daily for a period of two weeks.



Large wound caused by a kick.
Photo by Author.

CHAPTER X.

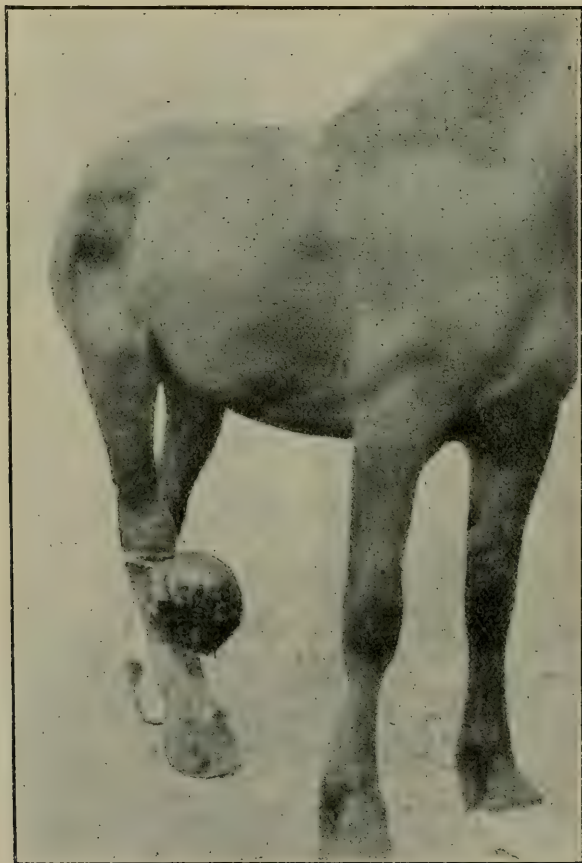
Wounds and Fractures

WIRE CUTS, KICKS, CALKS AND WOUNDS. (How to Prevent Callouses and Heal a Wound Without Leaving a Scar)

A deep wound of this kind is not safe to be closed up at once by means of sutures, especially if it is caused by a kick from another horse, a wire cut, or an accident, where dirt, filthy and poisonous germs have been introduced into the animal tissues and cannot be removed no matter how carefully you clean and disinfect the parts involved. Sewing such a wound with the object of healing it up quickly, often terminates in blood poison or lockjaw, shortly followed by death. Often it is impossible to secure competent medical aid in time to save a valuable animal.

TREATMENT

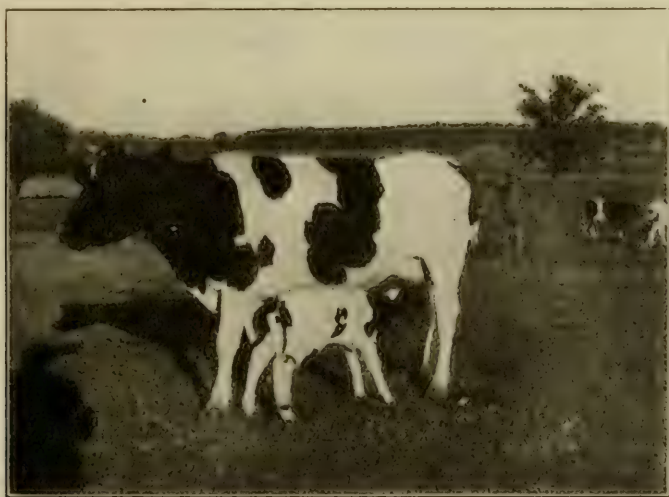
When a horse or any farm animal has sustained a wound of any kind, whether it be caused by a barbed wire, kick, or other accident, you should first of all remove, with as little disturbance as possible, all particles of dirt, straw, chaff, or hair from the wound. If the cut is so large that the skin lops down considerably you may make a suture or two with twisted silk; if the cut is straight up and down, or nearly so, forming a gap, it is not necessary to suture. You are now ready to apply some antiseptic which will favor rapid healing and act as an astringent, by which the edges of the wound are practically drawn together. For this purpose take an original package of Lotio Vita, dissolve in a quart of rain water, shake well and apply freely with your hand. Repeat twice daily and if the edges of the wound become hard and brittle, occasionally rub on a little fresh, unsalted hog's lard. You will be surprised at the rapid healing power of this preparation. It leaves no scars or callouses of any kind, nor will it permit proud flesh to form. It is not necessary to apply bandages with this treatment, unless they are applied to arrest hemorrhages. The wound fares better without a bandage. This is a new but thoroughly reliable remedy. It has proved so satisfactory that I recommend my readers to keep a package on

APPLYING LINIMENTS FOR WIRE CUTS

The result of applying liniments to a wire cut produces large grout.

hand ready for use in case of emergency. It keeps indefinitely and is not expensive, and is now sold by all up-to-date druggists.

Wire cuts, kicks, and other wounds are healed most quickly and without leaving any scars or marks by dissolving $1\frac{1}{2}$ ounces of Lotio Vita in a quart of rain water and applying twice daily. It is rarely necessary to sew up a wound when it is dressed in this way. Apply no bandages, for this is nature's remedy for blood poisoning and heals like magic if applied promptly while the wound is fresh. Liniments should never be applied to an open wound. They are made to irritate and are sure to produce objectionable callouses and eye-sores. See Fig. 19.



Calf with fractured limb in plaster cast.
Photo by Author.

FRACTURED LIMBS

Farm animals with fractured limbs, especially horses, valuable blooded cattle, sheep, and dogs, should not be destroyed without due consideration as to a probable recovery.

TREATMENT

If the fracture is not too near a joint, where it might possibly involve the same and cause a permanent stiffness, or within the

large, fleshy muscles of the thigh or forearm, a fractured limb can be placed in a plaster cast and mended even more quickly than that of a human being.

In applying the plaster cast care must be taken not to shut off the circulation in the parts below the fracture. For this purpose we usually apply a layer of absorbent cotton before applying the plaster paris bandage or cast. Care must also be taken to have proper drainage of the wounds, if any exist in connection with the fracture, and while applying the cast or bandage we must always provide reinforcements in the cast, such as wooden splints, so that the cast will not shift or lose its form before the plaster is properly set. Animals will not refrain from moving during this time, like human beings, and may spoil the fit and purpose of the cast.

The above photo cut shows a blooded Holstein calf nursing its mother immediately after the cast was properly set on a fractured right hind limb. This calf made a splendid recovery, the cast being taken off and renewed in 68 hours, after which it remained on permanently until the bone was mended. The larger adult animals, such as horses and cattle, should be confined in a sling in order to keep them quiet. For calves, colts, and dogs it is not necessary.

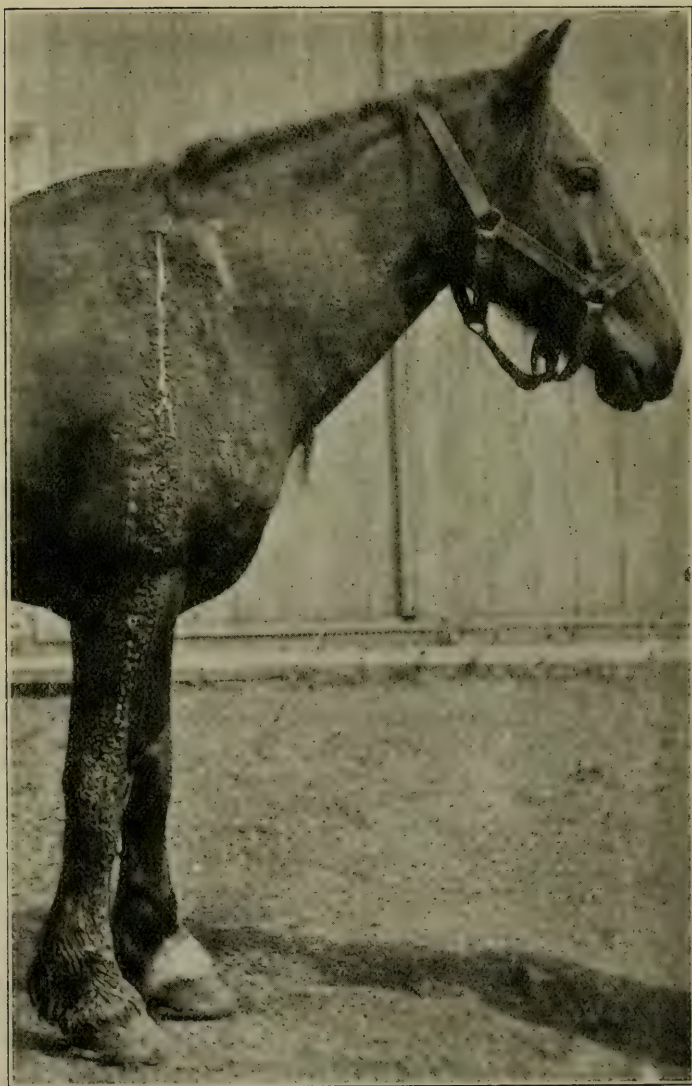
FISTULOUS WITHERS

Fistulas of the Withers, of which the above is a typical likeness, are usually caused by external violence of some kind, such as severe jars while drawing heavy loads, ill-fitting collars, bites from another horse while at play, or during an actual encounter, severe blows, running under some firm object which is lower than the framework of the rose, of which the withers are the most prominent part, tightly strapped saddles, etc. These cause death of some of the inner structures, which soon act as foreign bodies, and which nature attempts to caddy out by the process of sloughing or supuration. Pus pockets are found in the region of the injury, which are often deep-seated and become more and more serious as the case becomes chronic. The pus gravitates and involves more tissue as the disease progresses; occasionally you will notice a pronounced swelling, which breaks open and discharges for a while, but soon heals up, only to break open again in a short time. Sometimes the most prominent bony structures of the withers (dorsal spines) are involved to such an extent as to cause necrosis or death of the parts, which necessitates a removal of some of the bony structure before you dare attempt to cure the fistula.

TREATMENT

Various theories have been advanced as to the treatment of fistulous withers. Some of the writers claim it to contain infectious germs, which leads them to believe that the disease is contagious, but this theory receives very little credit. Although infectious germs are found in the fistula, it is quite probable that they have gained access to the fistula after it has been established and most likely after it has broken open and discharged, thus affording an opening for the introduction of germs, which can hardly be avoided under ordinary surroundings, as the farmer or stock owner cannot keep the horse's environment thoroughly aseptic; at least it is not customary for him to do so.

Strong caustic solutions are often injected. As the fistula has no drainage or dependent opening, they have little or no effect. Astringent and antiseptic solutions or powders have practically the same effect. The only reliable remedy is to remove the entire fistula and (necrotic) bony substance surgically, making any opening at the most dependent parts of the pockets and irrigating the wounds once or twice daily with a solution of one part of bichloride of mercury to 1,000 parts of water with a fountain syringe. Make liberal



Fistula of the withers.—Photo by author.

openings and give plenty of drainage, so that the wound will heal from within first and avoid a closure of the outer surface until all the inner structures have been replaced by natural granulation. In making the incision you must be prepared to arrest hemorrhages from the arteries and veins, which you are compelled to cut in order to operate successfully. For this purpose you must provide yourself with an artery or haemostatic forceps with which you can seize the vessels and effect an immediate closure. It is also well to have on hand a curved needle and braided or twisted silk which has been thoroughly sterilized in a five per cent solution of lysol. All instruments employed should be sterilized in this solution, as well as your hands, and clean sponges which you may use for absorbing the slight capillary hemorrhages. It is always better to employ a skilful veterinary surgeon for this purpose if one can be procured in your vicinity, one who is thoroughly acquainted with the anatomy of the parts and can perform the work scientifically. The operation is not expensive and is well worth attending to in time, if your horse is worth keeping at all. Should you conclude to attempt this work yourself and need further instructions, write to the author asking for such information as you may desire, and you will receive a prompt reply by mail.

POLL EVIL

Poll Evil is a fistula of the poll and is of the same nature as fistula of the withers. Apply the same treatment.

OPEN JOINTS

Open joints are usually caused by kicks, wire cuts, nail pricks, or accidental wounds by which a joint is opened and the synovia (joint water) allowed to escape. Wounds of this kind are always dangerous, as the escaping synovia affords a most favorable medium for the entrance into the system and propagation of dangerous infectious germs.

Synovia can easily be distinguished from other discharges, because of being odorless and the flow increasing by each move of the joint. When exposed to the atmosphere for a short time it will

coagulate and assume the consistency of jelly and is lighter in color than common pus.

TREATMENT

Never probe an open joint, as you only make infection more liable. Wash the parts thoroughly clean with soap and warm water and when dry apply Elk's Dessicant over the entire surface once daily for three days, or until the opening has swollen shut, which may happen after twenty-four hours, then give the patient, if an adult horse or cow, a large teaspoonful of Sanguitone to resist infection through the circulation. In smaller animals give smaller doses according to age and size.

As an additional precaution to the above we often give a hypodermic injection of mixed bacterins. This treatment has proved a wonderful success in the extensive practice of the writer.

CHAPTER XI.

Diseases Common to the Muscles and Extremities

HOW TO LOCATE LAMENESS IN A HORSE

Lameness is a disease or an injured condition of a joint, bone, ligament, tendon, hoof, or muscle of an animal and can be located usually by heat, swelling, inflammation, enlargements and lack of action in any part of the body or limbs. The signs of location are as follows:

Hoof lameness improves with exercise. In cases of splint lameness a horse walks as though sound, but trots lame. In shoulder lameness a horse stumbles considerably.

Joint lameness is usually indicated by heat and swelling. Tendon lameness is the same. In ligament lameness there is no swelling and no heat and there will be no recovery unless the trouble is located and treated. In ringbone and curb lameness there is always an enlargement present. Bone spavin lameness sometimes appears without enlargement. The animal starts off on the points of his toes and warms out of it as he is exercised. Bog spavin or thoroughpin always shows an enlargement.

TREATMENT

Ascertain which of these descriptions fits your case, then see the index under its respective title for a proper remedy.

FOOT AND LIMB TROUBLES

Diseases of the feet and limbs are usually brought to the stockman's notice by the presence of lameness in the animal affected; therefore, we are justified in considering LAMENESS a symptom of disease in the parts mentioned, *it being an expression of pain in one or more limbs during movement*. While the lameness may be plain, the location of that lameness is far from plain, and in many cases will per-

plex even the expert veterinarian; to aid us in the detection of the diseases certain symptoms have been noticed as accompanying certain conditions; e. g., if the animal is lame in the shoulder, the foot is kept behind its fellow and the limb and knee are relaxed, the toe touching the ground. The limb may be said to hang loosely and when brought forward it describes an out turn. In elbow lameness the forearm is extended, the knee flexed and the foot is on a level or behind its fellow.

LAMENESS may be shown when the foot of the lame leg is on the ground, e. g., in corns, when the foot is off the ground stiffness of the knee may be shown, although little pain is evidenced. It is useful to know that lameness may be partially hidden (masked) in a horse by the manipulation of the groom, such as exciting him, showing him on soft ground, preventing the animal breaking into a trot by holding him tightly by the head and by keeping the sound side to the examiner. The lame animal should be examined both in the stable and outside, in the latter case at both trot and walk, so as to properly detect the trouble. If the horse is sound he will stand squarely on the forefeet, with probably one hind foot rested alternately, or if very tired, a near foot and off hind foot will be flexed or vice versa.

POINTING is a term often used in connection with lameness; a horse is said to point with a fore foot, if, when standing he keeps it in advance of its fellow, in which case the heel or toe may be raised or the foot placed flat upon the ground.

The novice is often perplexed to know whether the lameness is before or behind, according as the animal is trotted to or from him. In this connection it might be mentioned that the head and neck constitute the balancing pole of the body. In lameness of the fore limb the head, if free, will be raised higher than usual when the lame leg, if a front one, comes down on the ground. A sharp turn to the right or left will also aid, as the weight will be thrown on the forehand. If the lameness is behind, the head will be lowered when the limb is brought to the ground. The slow trot on hard ground with the groom a couple of feet from the animal's head, who is made to *go straight away*, will be the best pace at which to examine. If lameness in front is suspected, have the animal trotted towards you and note the movements of the head, the legs and the feet; then note the action from the side, whether shortened or not, and if the actions of the muscles of the limb are understood, the variations from the natural gait will be more readily understood. Uprightness of a fore pastern is symptomatic of lameness in the foot of that limb. Usually if the fore part of the foot is affected, the heel is lowered, e. g., in Founder. If the back part is affected as in coffin joint lameness, (navicular disease) the heel is raised, while if

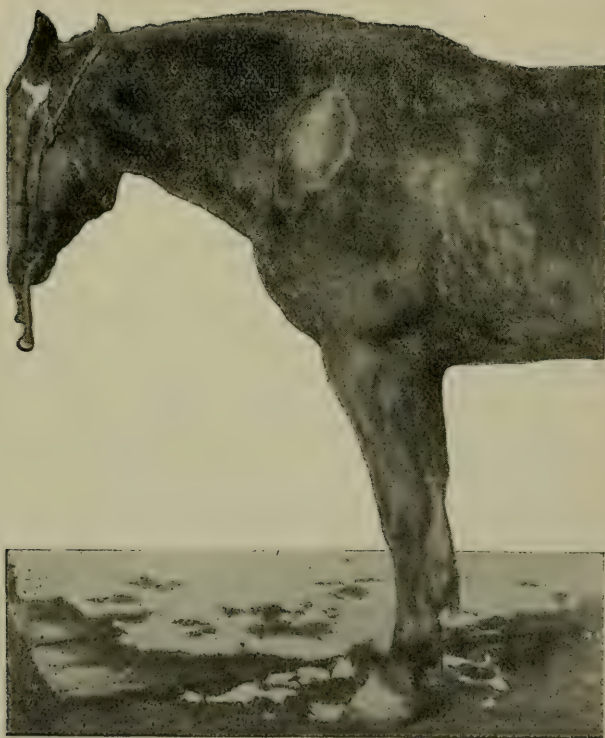
due to bad nail puncture or fracture, the foot may be lifted entirely from the ground. Frequent lifting from one forefoot to the other is indicative of coffin joint trouble.

If lameness behind is suspected, let the animal be trotted away from you and watch for the limb on which the animal dwells and on which he puts his weight; as to which is raised the higher; whether a toe is dragged or not; then turn to the right about and left about, noticing whether any reluctance is shown to putting weight on a limb.

THE SPAVIN TEST

This test may be given if hock lameness is suspected, by flexing the hock tightly, which is performed by lifting the limb up close to the body for a few minutes, the foot being let down and the animal trotted off smartly. If the lameness is due to spavin, the lameness will be more marked after giving the test, the horse sometimes going off on the hop. After a drive, or warming up of a horse, the lameness will often disappear; in such cases the examination should be deferred until the horse has cooled off, when the lameness will usually show very plainly. Horses often drive out of the lameness when warmed up; that is, the lameness disappears, except when lame from SPLINTS, SORE SHINS, CORNS, FOUNDER or SPRAINS. Intermittent lameness, that is, the animal goes lame one time, sound another, is characteristic of RHEUMATISM or NAVICULAR TROUBLE.

Lameness behind is usually in the hock; if in front, the feet of heavy horses are usually affected, light horses being liable to affections of the canons, tendons or ligaments, as well as the feet. Wearing of the toe of a front shoe is symptomatic of navicular; of a hind shoe, spavin; if the heel is worn it is likely to be due to either Founder or Ringbone.



Serous Scyst—Caused by a bruise to the shoulder
due to an ill-fitting collar.

SHOULDERSLIP (Sweeney)

Shoulderslip, or as it is generally termed "Sweeney", is rather a common accident in young farm horses, especially among those employed in breaking new land containing bush or tree roots. The shoulder muscles are sprained and as a result wasting (atrophy) of the outer muscles takes place, and the animal is then said to be SWEENIED. This affection is easy to diagnose when once the wasting has occurred. The treatment is necessarily of long duration owing to the damage to the muscle cells. The wasted muscles usually take months to fill out. In the early stages bathing with hot water, Elk's Vesicant, or better, injecting 10 drops of turpentine in various parts of the Sweeney, will usually give the desired results. Rest, the use of a breast collar and avoidance of the cause will also aid in recovery.

Wasting of these muscles may result from rheumatism or chest founder (navicular disease).

SORE SHOULDER AND COLLAR GALLS

These are very common on the farm and can best be prevented by having collars and harnesses that fit. A very good method is, on returning a horse to the stable, to loosen the back pad, collar, or saddle, lift up and replace, leaving there for 15 to 30 minutes. The reason for so doing is that the parts under the harness are quite hot, and if the gear is removed at once the parts become chilled and a congested swelling results, unless a brisk rubbing is given the parts. The use of a strong solution of alum and water, or salt and water, to the shoulders after removal of the harness will serve to toughen the parts. If sores result, they should be treated as ordinary wounds. In some cases they are slow to heal, e. g., at the top of the neck, in that case needing the stimulating effects of some blistering material to increase the blood supply to the parts, while the chronic sores of the shoulder often take on a hard, toughened appearance, being termed "sitfasts". Such a condition must be removed with the knife and treated with a solution of Lotio Vita.

A sudden swelling often results from the use of a collar too small. It is not an abscess containing pus, but a swelling containing serum, which on being let out resembles bloody water. Such cases must be opened at the most dependent parts and syringed daily with a solution of 1 part of bichloride of mercury to 1,000 parts of water. If left alone they get hard and are a continual cause of sore shoulder, eventually calling for the knife, and if neglected may cause infection (blood poison).



Collar bruise causes infection.

CAPPED KNEES

Splints are bony enlargements on the cannon, which connected of bedding in the stall. In the early stages bathe with hot water and apply National Electric Cream twice daily; later use the knife, or the insertion of a seton (a piece of medicated tape) through the enlargement from top to bottom will help reduce the enlargement.

SPLINTS

Splints are bony enlargements on the cannon, which connected with the small splint bones and are the result of inflammation caused by concussions. Young horses are very liable, the scrub more so than the pure-bred, owing to the inferior quality of the bone. In order to detect them, although in many cases they are easily seen, the finger and thumb are passed down over the small cannon bone, notice being taken of any variation from the smoothness of those bones. The lameness is due to the stretching of the periosteum (bone covering) during the throwing out of the bony material (splint formation). The lameness quite often disappears when once the splint is formed, and the enlargement may also disappear in the same manner that a callos does. The lameness shown is often out of all proportion to the size of the splint; those more serious are close up to the knee joint. Exercise increases the lameness. If no lameness is evident, do not bother the animal with blisters, etc. Always let "well enough" alone. If lame, give rest, reduce any inflammation with cold water, and thoroughly rub the parts firmly but gently, with Elk's Absorbing Ointment for 10 to 15 minutes once a day for 3 days, then rest two weeks and repeat until relieved. Splints are more common on the fore legs than on the hind legs and more often on the inner side of the limb.

RINGBONE

Ringbone is a disease of the bony structure, occurring as the result of inflammation of the pastern or coffin bones, usually on the hind pastern, but may be found on the fore limbs. This trouble occurs in different locations on the pasterns, e. g., the two pastern bones are termed "high ringbone". If the joint between the small pastern and coffin bone is affected the "low ringbone" is said to exist and it is a serious condition. Sometimes the enlargement appears on the large pastern bone and is then termed "false ringbone". The



Point firing for ringbone.

bony deposit may be at the front or sides of the bones affected and may cause lameness by interfering with the movement of the tendons or ligaments. Ringbone may be caused by a horse going on the toe, the result of spavin. It is important to remember that the pasterns may be rough, large and prominent at the joints and yet not be affected. The prominences noticed are to give attachment to ligaments and muscles; both pasterns should be alike. In the early stages there is a stiffness of movement of the pastern joints, and if in the fore feet, a tendency to walk on the heel, the lameness being shown long before any enlargement can be noticed.

The only satisfactory treatment is the firing iron, followed by Elk's Absorbing Ointment, once daily for three days; then rest two weeks and repeat until relieved. *Avoid breeding* from sires or dams with this disease.

SIDEBONES

Sidebone is the apt term used to describe the turning into bone of the lateral cartilages, which change may be partial or complete. As will be remembered, these cartilages are of a gristly nature and yield more or less under pressure with the fingers and thumb. Heavy horses seem to be the ones mainly affected and in connection with this fact concussion can hardly be the cause. Injury from stepping on one another, and HEREDITY, greatest of all, are the probable causes. The symptoms are lameness with a stilty action and shortness of gait, hardening and enlargement of the cartilages.

The treatment is not satisfactory, blistering and firing doing good only in the earlier stages. A bar rocker shoe with frog pressure, fomentations and rest, later work on soft ground, will be about the best treatment. Some people have the animal nerved if the lameness continues. Above all, *do not breed from a stallion with sidebones*, and if judging, throw out a stallion so affected always.

COFFIN JOINT LAMENESS (Navicular Disease)

This is a disease of the coffin joint and its cartilages, which comes on slowly, usually the result of concussion, more especially if the foot is not a strong one and of good shape. Shoeing with high heels, thus relieving the frog from pressure, will increase the chances of concussion and indirectly increase the tendency to this disease. Long, hard, continual driving is a frequent cause; the endless bang on a hard road will almost invariably cause this disease. The speed has little to do with it. The pastern of an affected foot is more upright and concave and the heels often strong.

SYMPTOMS

Pointing in the stable, favoring of the limb affected, shortening of the stride, with a stilty, stubby gait, are all symptoms of this disease. If one notices a horse affected with this disease, driven on the street, which is later on stopped and tied, the animal will be noticed to paw slightly with the affected foot. In fact, it is really hunting a comfortable spot on which to rest the foot, so as to allow the coffin joint to be flexed; he may even rest the heel on a stone. If both feet are affected, the gait is very short, he paddles, stubs the toes, and if the pain is severe, will lie down the greater part of the time when in

the stable. As a result the muscles of the whole limb may waste, thus giving rise to the condition termed "Chest Founder". The hoof and coronet will also be narrower than usual.

TREATMENT

Give rest, apply Elk's Vesicant once daily for 3 days, and turn on a soft pasture. If not cured, get your veterinarian to put in a frog seton, and if that fails, have him nerve the animal, after which operation the feet will need daily watching and care, although it will enable the animal to work without lameness for a year or two after the operation. Have the feet pared so as to throw slightly forward on the toe, and apply a wide-webbed shoe with a roll to the toe.

PRICKS WHILE SHOEING

These pricks are not as common as they used to be, the shoeing smiths being more careful than heretofore and as a result of the various horseshoer's associations studying the anatomy and physiology of the feet. The cause may be driving nails too close or in the wrong direction, thus penetrating into or bearing on the quick. The lameness and pain may not show for a day or even for a couple of weeks. In the latter case pus is likely forming. Some horses have thin walled hoofs and are easily pricked; the nearer the heel the greater the danger; inside quarters being oftener pricked than outside. If a horse has been left shod for some months and when reshod has the foot cut down pretty well, he is apt to go lame, due to the strain thrown on the tendons and ligaments, or to the sole having been made too thin, thus pressing on the sensitive parts, and the animal may be thought to have been pricked. If a horse goes lame after shoeing, the nail being driven high or the point not shown, or the hammer gives a dull sound, we may suspect pricking. If blood follows the withdrawal of a nail, or if the nail is wet, due to matter (pus), we can be certain that the quick has been hurt. In some cases after paring the feet a stain may be seen around the nail hole.

THE COLOR OF THE MATTER (Pus) is often a guide as to the extent of the injury. If black, the wound is only superficial and will soon recover; a yellowish color shows pus more or less deeply seated; if purple and a putrid smell, the chances are that the pedal bone is affected. Should great pain be shown after letting out the matter, the injury is very serious. In this form of disease the same rules

apply as to other wounds. Plenty of drainage so as to get the pus away must be given; hence, pare the foot, steep in a hot, antiseptic solution for a couple of hours, or bath of *Lotio Vita*, one ounce to a pint of water, may be given daily for an hour. If the hoof is hard, the application of a hot, flaxseed poultice will be useful before doing much paring of the foot. After paring down, baths followed by oakum and tar stoppings are to be preferred to poultices. Pricks from shoeing or from nails picked up on the street, will, if not attended to, result in pus forming and working upwards to the coronet and there breaking out, thus forming what is known as a "quittor". It is needless to say that the treatment for this condition will have to be left to the surgeon.

CORNS

Corns are bruises of the sensitive sole, usually in that portion enclosed by the inner angle of the wall and bars and usually present in the fore feet. Weak heels predispose to the disease; very strong heels may also result in this trouble, due to pinching of the sole between them and the pedal bone.

The causes of corns are several, chief of which is faulty shoeing, putting pressure on parts not intended to bear it, by cutting down the bars or putting on short heeled shoes, and especially by the common practice of leaving shoes on horse's feet for months at a time without resetting and removal of excess horn growth. Excessive thinning of the sole and later stepping on a stone will cause the sole bruise (corn). Some weak-footed horses will have corns in spite of all methods of shoeing; barefooted horses rarely have corns.

The lameness resulting from corns gets worse as the animal is worked. He may point his foot forward while at rest. If the shoes are removed and the sole pared, the surface will be noticed to be reddened and in some cases pus may be found, always a serious condition. Removal of the shoe, paring out of the seat of the corn and a poultice to the foot will in cases of lameness, due to a corn, result in almost marvelous cures.

TREATMENT

Antiseptics, such as tar, should be used and a bar or three-quarter shoe should be put on, care being taken to avoid pressure on the affected parts.

FOOT ROT IN CATTLE AND SHEEP

This disease will often occur if the feet are allowed to grow too long and get fouled with manure, or as a result of running on low-lying, wet, muddy pastures. Lameness will be excessive, the pain in some cases causing the animal to go off its feed, fall behind the flock, or herd, and sometimes go on its knees. In such cases trim down the feet and bathe in a Lotio Vita solution, $1\frac{1}{2}$ ounces to a quart of water. Two or three applications of Lotio Vita solution will usually cure most cases. Where large numbers need treatment the solution is made and placed in a wooden trough and the animals walked through it.

A good way to treat cattle affected is to take a piece of cheese-cloth soaked with the drug. After cleaning between the cleft, work back and forth and then a clean piece of cheese-cloth which has been soaked in the solution may be tied on the foot. In severe cases poultice with flaxseed or boiled turnips, after cleaning and dressing with the solution. Do not use cow dung, or other dirty materials.

STIFLE OUT (Luxation of the Patella)

Luxation of the patella of a yearling colt.

Stifle Out exists in two forms, the partial and complete. The former is usually found in young colts, the result of heredity; stallions poorly muscled through the stifles get such stock; the latter in older animals, the result of an accident. In young colts the bone will be seen to slip in and out, a clicking noise being made at each step; for such cases Elk's Vesicant repeated at two-week intervals will often aid the young patient. To avoid such cases feed well, and do not keep on very hilly pastures, also avoid making the foal following its dam during the day while working. The construction (anatomy) of the parts will aid in understanding this trouble and the means of reduction. In partial dislocations in grown horses a sharp crack of a whip will startle the animal and the bone will fly into place; in other cases (complete dislocation), it will be necessary to place a rope around the fetlock of

the affected limb, and have an assistant to draw the limb well forward, the hand being used to press the bone forward and inwards at the same time, when it will usually fly into place with a sharp click. Once in place it is best retained there by keeping the limb well forward by means of a side line and by the use of a stifle shoe (a shoe with a piece of iron projecting in front four or five inches) on the foot of the affected limb. A smart blister, Elk's Vesicant, applied twice at an interval of two weeks, will assist in repairing the injury. That the animal should be rested during the treatment every sensible person will understand. Treatment in these cases should be prompt.

When the lesion occurs the limb affected is stiff, nailed to the ground as it were, kept out behind the body and if made to move is dragged with the toe down. The wall and even the front of the pastern may be on the ground. The animal moves with very great difficulty.

SPAVIN

Point firing for spavin.

Spavin is the bane of horse flesh and horsemen, and while of two kinds, (a) bone spavin, affecting the bones of the hock, and (b) bog spavin, affecting the bursae of the joint and adjacent structures, there is little difference as to the serious nature of either trouble, owing to the difficulty in curing either form of spavin.

BONE SPAVIN (Jack)

Bone Spavin is a disease of the bones of the hock joint, an inflammation of the articular (joint) surface, as a result of which marked lameness is usually shown, following which a bony enlargement is thrown out at the lower part of the internal side of the hock joint. The result of this disease often is stiffening of the joint. The more serious bone spavins are those affecting the upper row of hock bone, situated towards the front of the joint and affecting animals over six years old. Coarse hocks may exist and if there is no lameness and both are alike, should not be condemned. The causes of spavin are bad conformation, sprains, excessive work of the hind limbs, result of jumping, high school work, tying in below the hocks. This disease is sometimes seen in cattle and sheep.

Spavin is in many cases easily detected. The enlargement being accompanied by lameness, which is characterized by a shortening of the stride, dragging of the toe, which is unnaturally worn as a consequence of the lameness, which the horse will warm out of, but if stood up for twelve to twenty-four hours, will show quite markedly. If recent, there may be heat of the parts and no enlargement; in fact, in that form known as OCCULT (hidden) Spavin, no enlargement is shown at all.

EXAMINATION OF THE HOCKS

To detect the enlargement the examiner should stand in front and a little to the outside of the foreleg of the same side as the hock to be examined. The hock should present a somewhat wedge-shaped appearance, the base being upwards. By placing one's self in a similar position by the other foreleg, the other hock is seen and a comparison made, the only safe way to detect the enlargement. If suspected, the examiner may flex (close the joint), the hock up tightly and have the animal trotted off quickly, which if affected, will limp perceptibly. The hocks should also be felt with the hands, the off hock with the left palm, etc. The treatment is preventive and curative, the former by *avoiding the use of spavined sires or dams*, by proper shoeing and avoidance of too heavy loads. The curative consists in reducing the inflammation by giving rest, warm fomentations, a high-heeled shoe, and Elk's Absorbing Ointment, and if that fails, the firing iron and blister, which should be left to the veterinarian. Never apply strong acids to eat out the bone. See illustration, Fig. No. 33.



A spavin as it ought to appear when properly fired with a thermocautery, leaving no scar or blemishes and relieving the lameness permanently.



FIG. 33

An attempted cure for spavin by misapplying drugs fails to relieve lameness and leaves a blemish forever.

BOG SPAVIN

Bog Spavin is a condition in which the capsular ligament of the hock joint is distended by joint oil (synovia), appearing as a soft swelling on the inner sides of the hock, just above the site of bone spavin. This disease occurs in two forms, (1) without any inflammation or lameness; (2) a hard, painful swelling with accompanying lameness. The causes are premature overwork; defective conformation due to heredity; the swelling being soft and cool; it may be due to overfeeding, such as for show purposes. In such cases cold water compresses and a good hand rubbing for 20 to 30 minutes before taking before the judges will often remove the enlargement for a short time; treatment is usually unsatisfactory, pressure by the use of a Bog Spavin and Thoroughpin truss being the best.

THOROUGHPIN



Thoroughpin off hind leg.
Photo by Author.

Thoroughpin is rarely absent when Bog Spavin exists, and is due to the pressure of the fluid constituting the Bog Spavin on the bursae of the perforans tendon, which is thus pushed out of place. This lesion appears as a swelling at the back part of the hind leg, just above the joint of the hock and in front of the hamstring. It can be pressed from side to side with the finger. The treatment is the same as for bog spavin. In draft stallions it may be due to a sprain of the tendons, a serious condition.

CURB

Curb is an enlargement (a bowing out) at the back part of the hock, about six to eight inches below its point. Usually it is described as a sprain of the ligaments at the back of the hock. Quite often the bones of the part are affected also, the enlargement being due in many cases to the pushing outward of the ligament by the inflamed bone. To detect the enlargement it is often necessary to stand to one side of the hock and then to the other so as to see the back line of the leg in profile. The causes of this trouble are many; jumping and slipping, going up steep inclines, and more especially conformation, the result of heredity. Horsemen often speak of Curby (sickle) hocks; *such a conformation is especially liable to curb, and is readily transmitted to the progeny by an affected sire.* The leverage exerted in connection with the hock joint is very powerful, the ground being the fulcrum; the weight, the resistance of the head of the lower thigh bone; the power, the muscles of the gaskin (lower thigh) attached to the point of the hock. The tendency to curb will be increased by:

- (1) Work too severe for the strength of the lever,
- (2) By disease or immaturity having rendered the parts unequal to the strain,
- (3) By the surface for attachment of the ligaments being too small, a tied-in hock,
- (4) By the muscles of the gaskin being very strong,
- (5) By the presence of a large angle formed by the direction of the weight and lever, as in the Sickle Hock.

It is an unsoundness and a very bad defect in stallions; is probably more common in light than heavy horses. Lameness is shown in the earlier stage as a rule. The application of a high-heeled shoe, and Elk's Absorbing Ointment once daily for 3 or 4 days, will generally overcome the trouble. If the lameness and enlargement persist, the veterinarian should be asked to fire the parts.

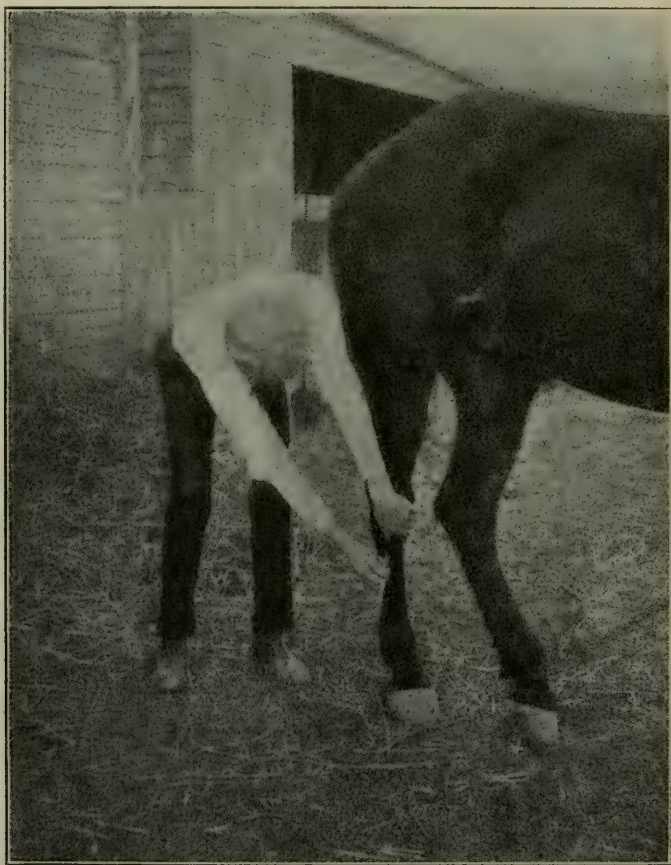


C

Bad (curby) Hind Legs C, a curb.

STRINGHALT

Stringhalt is a disease of a tendon of the hind limb. It used to be classed as a purely nervous affection. The affected parts (tendons) undergo severe contractions as a result of inflammation of those tendons. The exaggerated flexing of the hock, more quickly than natural, and high lifting of the foot seen when the animal is backed or moved forward, render the recognition of this diseases quite plain. The treatment is surgical and consists in cutting the tendon (peroneus) a short distance below the hock.



Curing a stringhalt by severing the peroneus tendon.

SHOEBOIL (Capped Elbow)

A typical shoeboil before operation.

Shoeboil is situated at the point of the elbow, the result of too narrow stalls, lack of bedding or pressure of the heels of the shoe when lying down. To prevent it the heel should be padded, or a piece of 2x2 inch stuff nailed crosswise in the stall, about half way back. This trouble usually calls for the intervention of the surgeon before being finally cured. If it is well fomented with warm water in the early stages and Elk's Absorbing Ointment applied every day for 4 or 5 days, the more serious blemish may be avoided.

CAPPED HOCKS



Capped hocks.
Photo by Author.

This condition is brought about by a bruise, or external violence to the hock. Sometimes horses do this by getting up in a hard-floored stall.

TREATMENT

First of all you must ascertain the cause, whatever it may be and remove it. Then cut the hair off close to the skin over the entire enlargement and rub well with Elk's Absorbing Ointment once daily for four or five days. Then rest a week to give the hair a chance to grow and apply again. Do not wash off at any time after applying the Ointment unless the parts become dirty. The above may be applied a third time if reduction of the cap is not complete. These enlargements contain synovia (joint water) and do not yield to treatment as quickly as ordinary enlargements; therefore, you must have a little more patience.

THRUSH

Thrush is a foul condition of a horse's foot, affecting particularly the frog or spongy parts. A moist condition is usually noticed about the cleft of the frog, which has an offensive odor and is of a dirty black color. The hoof is feverish and soon becomes contracted and tender. As the disease works upward into the sensitive parts of the hoof, the horse becomes lame. If not relieved in a short time, cancer and ill-formed hoofs are the result.

TREATMENT

Thrush is easy to cure in its early stages. A single application of Elk's Anti-Thrush packed firmly into the cleft of the frog and every ramification of the affected area, in the evening, will show a wonderful improvement by the next morning. If the case is an old one, where the frog becomes ragged and decayed, the foul portions must be completely removed down to the healthy parts before applying the Anti-Thrush. In such cases, repeated applications must be made, as many as the case may require.

COCKED ANKLES

Cocked Ankles are caused by a thickening of the posterior tendons of the leg, due to a slip or strain generally. The thickened parts naturally become shorter and bring about the cocked condition.

TREATMENT

To bring about recovery we must absorb the unnatural, thickened parts so that the tendon will stretch to its usual length and perform its natural functions. To do this remove the shoe and pare off all superfluous horny substance. Bathe the thickened portion of the tendon in warm water for 15 minutes twice daily, after which you must rub the parts well with National Electric Cream. This is a sure cure for an acute case. If the case is of long standing and has become chronic it may be necessary to use Absorbing Ointment instead of the Electric Cream, or it may be necessary to resort to the firing iron, if both of the above mentioned remedies fail.

CONTRACTED HOOFS OF HORSES

Contracted hoofs are usually brittle and feverish following continual hammering on the hard, dry highways, or any condition that will bring about acute or chronic founder. Following chronic founder the hoof will take on the ramhorned shape and appearance.

TREATMENT

Take off the shoes, soak the hoofs in water or a linseed poultice for twenty-four hours, then pare the sole down as close to life as possible and rub well with axle grease over the entire hoof. Clip off the hair above the hoof about one and one-half inches all around and rub once daily for five minutes with Elk's Vessicant. Do this for 3 days, then send to pasture or give the freedom of a large box stall for 10 days, when the above treatment may be repeated until the hoof has grown larger from the coronet to the wearing surface, which will take about six weeks.

HOW TO TREAT A NAIL PRICK

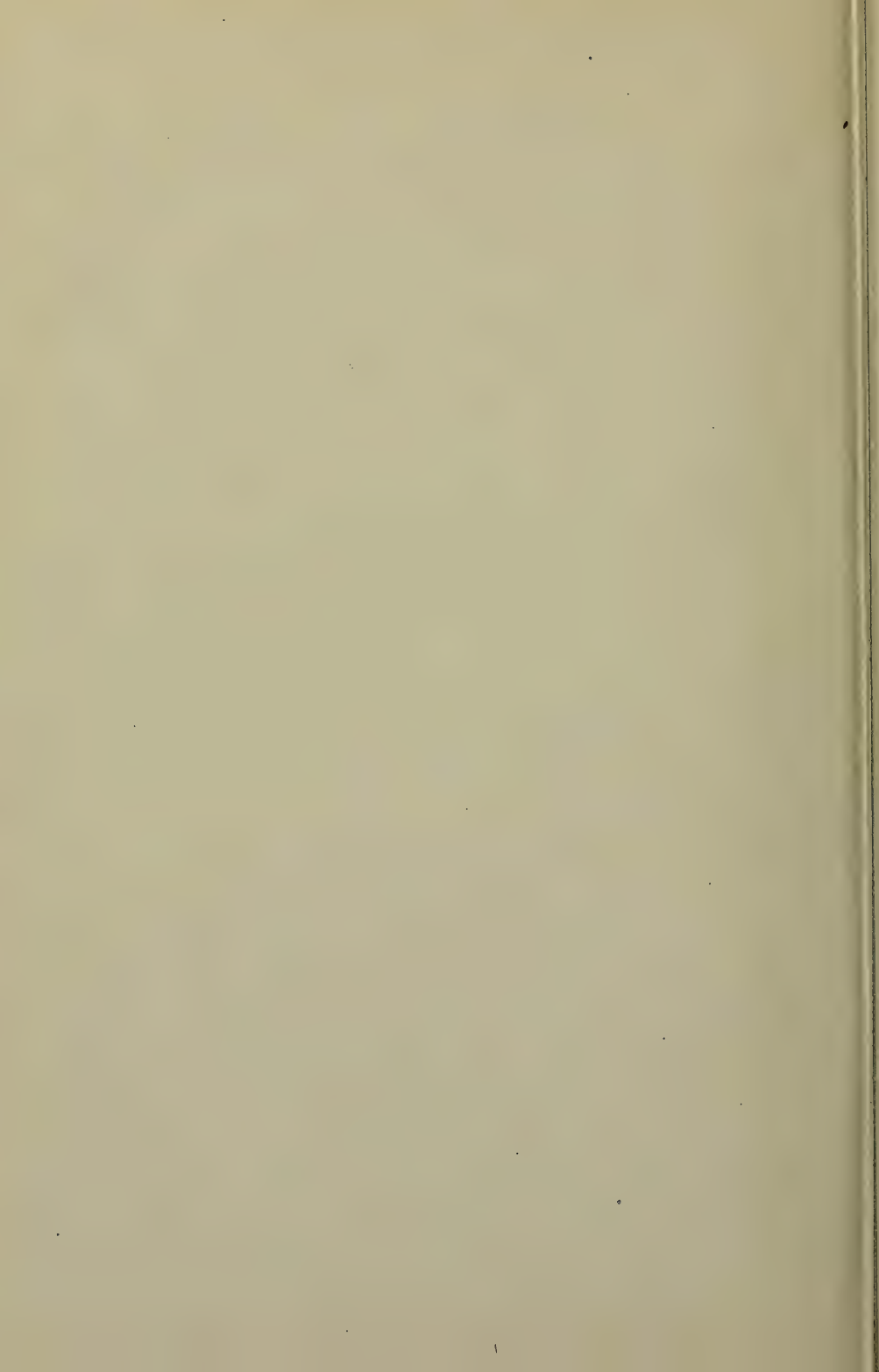
Nails, if picked up on the street or barnyard are always dangerous when they enter into the live tissue of the animal's body, especially so when rusty and introduced through the horny part of the hoof. Rusty nails always carry germs which cannot be avoided and such pricks are the common causes of lockjaw and septicemia, owing to the fact that a nail is extracted and the germs which are taken in with it are scraped off with the horny tissue and allowed to remain within the live and sensitive part of the hoof. The fact that the wound is small and closes immediately after the nail is extracted is the most dangerous to the animal, as this is the most favorable environment for the propagation of the lockjaw germs. These germs cannot propagate where there is access to air and sunlight.

TREATMENT

The treatment is to immediately extract the nail and make a liberal opening to the extent of the wound caused by the nail, thereby allowing access of air and a free drainage. When this has been done, drop a few drops of Solution of Lotio Vita in the wound. This will antagonize septic germs of any kind. If there are signs of great pain a warm linseed poultice may be renewed twice daily and the wound treated as above described.

SORE NECK

Horses frequently get sore and very painful necks while working, especially in the spring and early summer. There will be an eruption of the skin attended with swelling and a discharge. This is due to humor in the blood and must be treated through the circulation. Nothing will give quicker and more satisfactory relief than one teaspoonful of Sanguitone given in moist food three times daily. Wash the wound with warm water, just as warm as you can bear to your hand, three times daily. Dress with Lotio Vita as directed on package.



CHAPTER XII.

Common Farm Operations

DEHORNING

Dehorning is a surgical operation usually performed on cattle, by which they are rendered more tame, and consequently more easily handled. My experience is that if properly done bad results are very few. Cattle will often go right to eating; some cows will not even show any appreciable shrinkage in their milk; for the control of bulls this operation is indispensable. The operation is best performed during cool weather, so as to avoid flies, during the period from October until April. Best results are obtained in yearling and two-year-old cattle. The instruments in general use are the slippers or saw. I prefer the former as being handier, calling for less restraint of the animal, and if kept in good shape, well-oiled and sharp, do just as good work, only in a great deal less time. Bleeding from the operation is rarely serious. In heavy milking cows it may sometimes need attention.

Smear the hair at the base of the horn with vaseline and turn it back; then secure the animal to a strong post by means of a chain or rope, so that it can be quickly released. A stanchion might be used. Insert the bulldog (a nose forceps) into the nose and draw the head around to the flank. The operator then applies the clipper over the exposed horn and brings it as close to the head as possible, the object being to remove about one-fourth inch of the skin along with the horn, thus destroying the horn matrix and preventing the growth of unsightly stubs. To make a nice-looking head be careful to so apply the clippers that the cut will slope inwards from the bottom of the horn base; thus a pointed poll, resembling that of the Angus, will result. Calves may be dehorned by caustics, of which several varieties are on the market. A cheaper method, just as good, is to buy caustic potash in the stick form at the drug store. It will be necessary to wrap cloth about it when using or the fingers will also be cauterized. It is applied around the base of the horns, just where they join the skin.

TAPPING THE FIRST STOMACH OR PAUNCH (For Bloating)

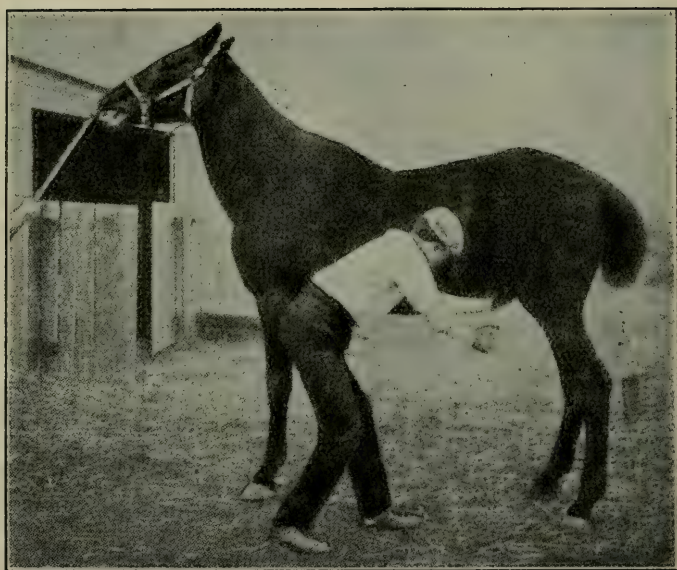
This is performed in cattle and sheep when badly bloated. The instrument used being known as the trocar, a pointed rod, and the canula, a hollow tube. It can be used for ringing bulls. The operation is performed in the upper left flank at a point equal distant from the point of the hip, the last rib and bones of the loin. The instrument being applied to the point described is given a sharp tap and pushed in its full length, the trocar withdrawn, the gas then rushes out of the canula, which may be left in for five or ten minutes. The paunch is the organ tapped in cattle and sheep; the tapping of horses should be left to the veterinarian. *Rumenotomy*. This is an operation for the removal of food in cases of impacted rumen. The operation when done, consists of the opening and removal of its contents and sewing up by the veterinarian. It should not be left to the eleventh hour. Good results follow when performed early and with antiseptic precautions.

CASTRATION

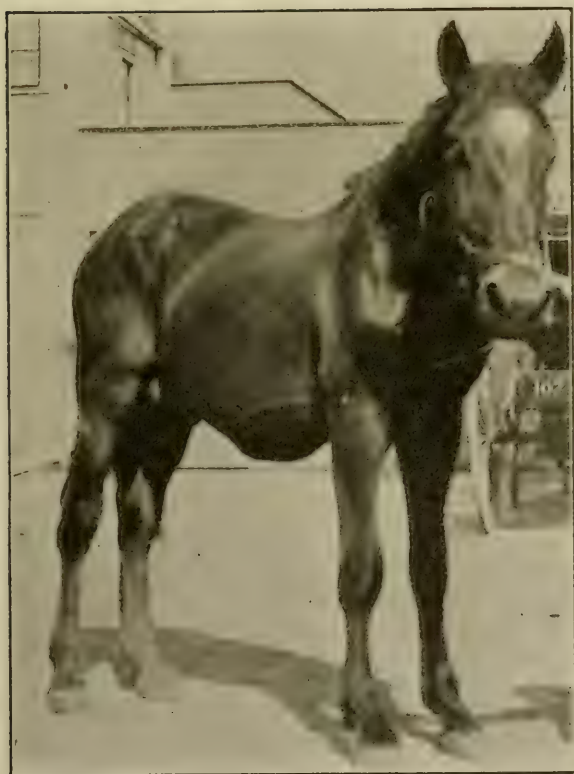
Castration is usually performed on colts, at a year old; if light in the neck and fore quarters they may be left until two years. The operation is done either in the standing or lying position. The first is hazardous and requires an agile and expert man, but of recent years it is found most practical because it presents the organs in their natural position. This operation should *not* be performed *unless* the colt is in good health; the results are better if a run at grass for a few days has first been obtained. The instruments needed are the emasculator and a castrating knife, which should be placed in an antiseptic solution ten minutes before operating, the hands and arms being also cleansed with the same material. It is also good practice to first examine the parts for ruptures, etc.

THE ESSENTIALS TO SUCCESS in Castration are: Thorough cleanliness, obtained by the plentiful use of antiseptics; good health at the time of operations and exercise afterwards. The scrotum is seized between the finger and thumb, so as to tighten the skin over it and a good incision (four inches or thereabouts) made over the testicle right through the coverings of the testicle, which will then pop out. The emasculator is applied well up on the cord and with the rough edge to the body, and the handles closed, the testicle is removed, the operation being repeated similarly on the other testicle. Some of the antiseptic may be poured into the wounds. A colt should be stabled for eight to ten hours, when it should be turned out with the others. If a mature horse, hitch and give a short drive or slow work; if cold rains occur the animal must be stabled. The wounds should be examined occasionally in order to see that they are kept open, thus insuring the drainage away of any pus. It should be remembered that the testicles of colts may not descend until twelve months old, sometimes as late as two years old.

Bulls are castrated standing, the head being tied up solidly to a strong post. An attendant at each side steadies him, the operator stands squarely behind the bull, seizes the scrotum, gives it half a turn round and draws it out between the hind legs. The incision is made from nearly the top to the bottom of the sac, the testicle drawn out and removed with the emasculator, or the cord is scraped slowly with the knife until severed, the remaining testicle being removed similarly. Calves are thrown down, the end of the scrotum cut off, the testicles drawn out until the cord breaks or the cord is scraped off as before. Lambs are castrated in a similar way, being held as described for small



Simple operation of castration in standing position.



Cepticema, the result of castration when colt was affected with distemper.

pigs. The knife or docking shears may be used for taking off the piece of the scrotum, which may be left any length desired.

Rams are castrated similarly to bulls, or by turning. (With the ram, you have him turned upon his haunches, clip the wool off the scrotum to get it out of the way. Have someone hold the ram and hold the hind feet up pretty close to the body, unless you wish to go to the trouble of tying. Take the end of the scrotum in one hand and with the other press the testicles well up into the body so as to tear them loose from the end of the pouch, you can usually feel them give way, now bring them down and taking them one at a time invert them and revolve them three times around the cord or until it is twisted tight. This you will find is not the easiest job until you get on to it. You can tell when the cord is twisted tightly by passing the finger along and feeling the spiral condition and the hardness. When you get one twisted let it draw up into the socket so it will not turn back right end up, while you operate on the other. Having them both done, tie the sac close up with a soft cord. Tie tight enough to prevent them coming down and turning back. Cut the strings off after 24 to 36 hours."—Curtis and Edgerton, Iowa Agricultural College). In this method germ infection, so much dreaded in rams, is avoided. Another method lauded by some, and which has been tried at the Station (W. E. S.) is to tie a strong cord around the sac or cod as close to the body and as tight as possible. Three days later the sac and stones are cut away about an inch below the cord and an antiseptic applied to the cut end.

Caponizing is the operation performed in removing the testicles of poultry.

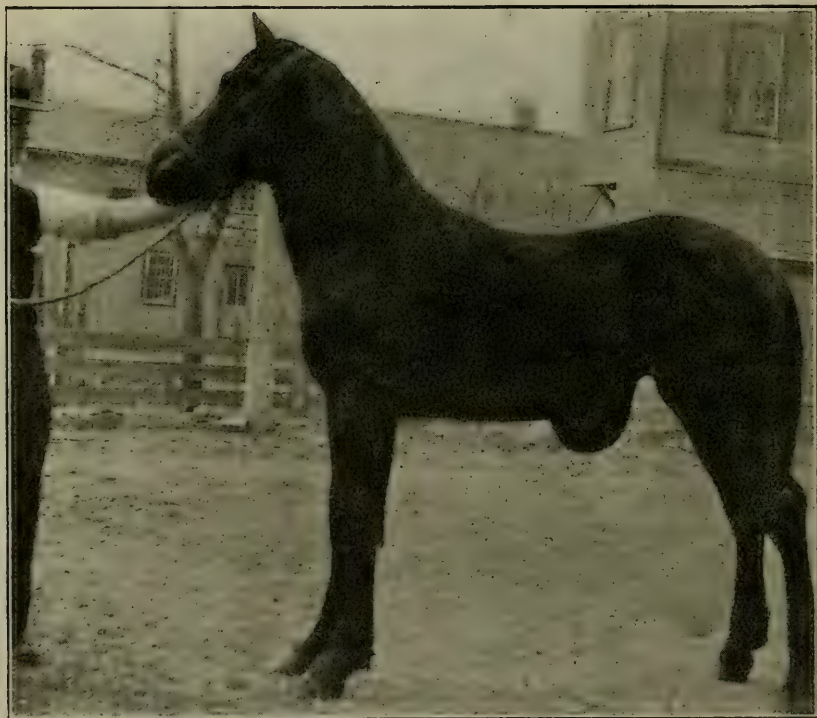
SPAYING OR CASTRATION of female may be performed in the sow, bitch and cow, rarely in the mare, unless a bad (vicious) actor (e. g., switcher and kicker) in harness. The surgeon should be called to operate on mares, and unless the stockman is expert, on the heifers also. Females thus operated on, fatten more readily and are not subject to the periods of heat; if a sow it is placed on its right side and secured, the upper hind leg being stretched backwards, an incision made vertically just below the region of the loin and the hand passed in up towards the back and the ovary felt for. When found it is drawn towards the opening, thus drawing the horn of the uterus also, rendering the other ovary easy to get in young sows. Both ovaries are drawn out and snipped off at once. In old sows, only one is exposed at a time and its ovary removed. The operation may be performed on the cow or heifer in the standing position, the incision being made through the upper left flank at the spot selected for tapping a cow, a strong scantling being slung parallel to the cow at a level a little above the

knee and hocks. The head should be fastened securely and the bulldog may be inserted in the nose. The incision is made with a knife through the skin. The operator can with his fingers secure the ovaries which are snipped off by the spaying scissors, and then brought out. The incision should be just large enough to admit the hand. A stitch or two through the skin, muscles and peritoneum draws the wound together, tar being applied over all. The animal should be starved for thirty-six hours before the operation and should only get light sloppy feed or grass afterwards for a few days.

RUPTURES

Ruptures may occur in pigs and lambs. If shown after castration, cleanse the bowels with tepid water containing some mild antiseptic and return them, to do which it may be necessary to stand the animal head downwards, and also to introduce the finger into the rectum. When returned sew up the opening as close to the body as possible, keep quiet and give but little food. The navel rupture (umbilical hernia is the technical term) is often seen in foals, and quite frequently disappears by the time the animal is a year old. Previous to that time the enlargement may be blistered, some cases recovering from that treatment; if, however, it persists beyond the age stated, a good surgeon should be employed.

Entires and geldings are sometimes ruptured in the region of the groin (inguinal hernia) and the rupture may even extend down into the scrotum in any male entire, constituting what is known as scrotal hernia. In the latter case the skilled surgeon's help is needed; the former trouble (inguinal hernia is often the cause of severe colicky symptoms in stallions and if not relieved, becomes fatal. The symptoms are as follows: Suddenness of attack, colicky pains growing more intense all the time, arching the back, lying on the ground or sitting up like a dog, pawing the ground, sweating heavily; the cord (spermatic) will be thickened and the scrotum feel cold to the touch. In such cases give a large dose of laudanum, three ounces in half a pint of raw linseed oil. If possible throw and turn the animal on its back and after oiling the hand introduce it into the rectum, and by gentle traction inside and working outside the bowel may be returned.



Large umbilical hernia successfully reduced by surgical operation.



Same patient six weeks after operation.

GENERAL TREATMENT OF WOUNDS

THE GENERAL TREATMENT OF WOUNDS may be briefly stated as follows: First, to stop the bleeding and remove any foreign substance, such as dirt; second, to protect from germs; third, to bring the parts as closely together as possible, keep down excessive inflammation, and prevent the accumulation of discharges. A wound is said to be healthy when it looks like a clean cut; unhealthy when it is pale, covered with pus, small clots of blood or proud flesh; inflamed or angry when hot and of a dark red color; indolent when the process of healing seems stopped before the proper time, e. g., a sitfast. It may be stated as a general rule that if a wound continues dry, and not ill-smelling, looks healthy, etc., that it should not be interfered with, but if pus forms it should be washed clean once or twice a day with clean, warm or cold water, a syringe or piece of cheese cloth (do not use a sponge, the cheese cloth can be burnt after once using), then apply once daily a solution of Lotio Vita, this heals without leaving a scar.

CONTROL OF BLEEDING (Hemorrhage). This is the first thing to do in connection with wounds, as the animal's life blood may very soon flow away, if the bleeding is from an artery. Bleeding from veins as a rule is seldom dangerous, unless the animal is in an already weakened condition. Sometimes bleeding is arrested by the contraction of the muscular coat of the artery; an artery partially cut through will continue to bleed, when if entirely cut across the bleeding will often stop, owing to the fact that the muscular contraction mentioned becomes possible.

Surgical methods of stopping bleeding are by the use of forceps performing the torsion (twisting), in this form the divided end of the artery is seized by the forceps and twisted until it breaks loose from the forceps; the emasculator and ecraseur are instruments partially working on this principle, they crush the coats of the vessels. Tying, or ligating, as it is termed, silk, twine, catgut or other materials are used for this purpose; styptics are occasionally used, they cause clotting of the blood and thus stop the flow mechanically, for such purposes tincture of Iron, or Lotio Vita are used; the hot iron (cautery) is also reliable for this purpose, in docking and castrating lambs, and sometimes in horses, in the larger animals bleeding may occur when the scab left from the burning falls off, usually about seven days after the operation. The use of dirty materials, such as cobwebs, earth, etc., is dangerous, as these materials often contain germs of various diseases, e. g., lockjaw (tetanus). Hot water (about 110° F.) or ice cold water will

also stop bleeding, warm water encourages it. The hands should be cleaned and dipped frequently in the antiseptic solution when dressing a wound. Stitches are not used as frequently in wounds of animals, the powerful muscular contraction tends to tear them out; in cases of severe wounds the veterinarian should be called. The use of such irritants: Acids, salt, turpentine, etc., serve no useful purpose on a fresh wound when compared with the pain caused, such materials really tend to hinder and thus prevent rapid healing; their use is also liable to result in permanent scars or blemishes. A solution of *Lotio Vita* is most satisfactory in these cases. It leaves no scar and heals quickly.

Another class of wounds to deal with are those known as fractures (breaks). They occur in hard structures, such as bone, differing from those already spoken of, which are of soft tissues.

FRACTURES require expert dressing and the application of bandages and splints in the larger animals; in calves, lambs, pigs and poultry the stockman can with little trouble bind up the broken part and save loss. Fractures are of various kinds and vary greatly in their seriousness; generally speaking, if the ends of the bones extend through the skin, the case is not worth bothering with. Fractures may be straight across a bone, on the slant (obliquely), or lengthwise; if the bone is broken without external wound, it is termed a simple fracture; if the broken ends do communicate with an external wound we have a compound fracture; if the bone is broken into small pieces the fracture is known as comminuted; greenstick fractures occur in young animals and resemble the break in a green stick, not a clean, sharp break, hence the term.

UNION OF FRACTURES (broken bones) takes place somewhat as follows: During the first 3 days inflammation and exudation is going on, from then to the twelfth day soft material is thrown out around the broken ends, and if the bone is hollow also in the hollow space; by the end of a month, if the ends have not been disturbed, the soft material mentioned is changed into bone (being known as the provisional callus); following this stage, material forms between the broken ends, being later converted into bone, which process takes about two months, thus completely uniting the broken parts; this material forms what is known as the definite callus. If occasional movement of the ends occur during this stage, complete union is not possible, and in such cases the material thrown out instead of becoming bone, takes on a gristly formation. The absorption of more or less of the excess of callus follows, usually taking several months or longer to be performed, before this occurs the point of union is shown by an enlargement. Briefly the treatment of fractures consists in bringing the broken

parts together, securing them in that position by splints and bandages, usually left on six to seven weeks, drainage and antiseptic treatment of the fracture if a compound, entire rest of the patient for at least three months in a well-bedded (short material, such as cut straw, shavings, sawdust, being used) box. Give good, nutritious, laxative food and plenty of green grass, if available.

Fractures may be detected by the presence of sudden, severe lameness, deformity of the part, which can be moved in unnatural directions, great pain, fever, and the grating (crepitus) of the ends of the bones together. Fracture of the tibia (bone of the lower thigh) sometimes occurs without displacement, being held in place by the strong periosteum. Fractures in old horses are always dangerous. In younger horses there is possibility of repair, if given proper treatment and nursing. Fractures of the hind legs are more serious than those of the fore; in the former, if above the hock, unless in very young animals, are usually not worth treating. Surgical operations are better avoided if possible during fly time or in animals far advanced in pregnancy.

CHAPTER XIII.

Diseases Common to Swine and Sheep

HOG CHOLERA



The above cut shows how hog cholera makes its first appearance in a herd. Notice the emaciated condition of the small shote below.

Hog Cholera is an acute febrile disease. So far as is known, affects only hogs, and is characterized by extreme contagiousness and a very high death rate. We have two forms, i. e., the acute and the chronic. That is because the disease in some cases is sudden in its attack and rapid in its course, while in others it lingers for weeks or months before death or recovery. The causative agent is the same in both, the difference being due to the variation in virulence of the germs and the resisting power of the hogs.

While the specific cause of hog cholera is the minute organism, there are many factors which may render a herd more susceptible to the disease; in general anything which tends to lower the vitality of the animal may be regarded as a predisposing cause. The germ is always present in the bodies of sick hogs and is thrown off in the excretions, hence the most dangerous factor in spreading hog cholera is the

sick hog; but an agency which might serve to carry a particle of dirt from infected yards may be the means of starting an outbreak of the disease.

SYMPTOMS

In the acute type the symptoms are chiefly sluggishness, a disinclination to move, weakness, loss of appetite, high fever, inflammation of the eyes and gumming of the lids; there may be diarrhea, red or purplish blotches may be seen on the skin, especially on the abdomen, inside the thighs, and around the ears and neck. In this form it usually runs a rapid course and the hog gets greatly emaciated. In fact, in acute outbreaks the hogs may die after being sick only a few days.

In the chronic type of the disease the symptoms are much the same as in the acute. The hog is sluggish, disinclined to move when disturbed, and coughing is usually heard when they are disturbed. They eat very little, lose flesh rapidly and later become emaciated and weak, so that they stagger or walk with an uncertain gait. The hind legs particularly appear to be very weak. The eyes are inflamed and the lids gummed together. After a few days there is apt to be profuse diarrhea. The hog usually lingers along for weeks, sometimes months, but finally dies.

PREVENTION AND TREATMENT

It has been shown that in a vast majority of cases the germ is transported mechanically in the bodies of sick hogs and on the feet of men or animals, including birds. It follows that the chances of an outbreak of hog cholera will be greatly lessened if a herd is protected from these carriers of infection. Hog lots should not be located near public roads, if this can be avoided and all newly purchased stock should be kept separate for at least thirty days. It is well to occasionally scatter slacked lime about the lots and to wash and disinfect the troughs with a compound solution of Cresol, one part to thirty parts of water. Hogs once affected are not very satisfactory or profitable, as they usually don't amount to much after recovery. If cholera has broken out in your neighborhood, it is well to guard against a possible contagion or infection by vaccinating all your hogs, which will render them immune from the deadly malady.

INDIGESTION AND CONSTIPATION IN PIGS

This is due to errors in diet and lack of exercise. In such cases five grains of calomel in a piece of fat pork given to a pig will tend to overcome the trouble. A laxative of raw linseed oil or Bovolax in milk are also useful, the cause must be removed. In this disease the pigs stagger around, refuse food, perhaps vomit, and may show signs of pain.

THUMPS IN PIGS

Thumps is a disease mainly due to overfeeding and is often a serious trouble with the young pigs, the cause being known, the treatment will be to reduce the feed and give the sow or pigs a dose of physic, raw linseed oil or Bovolax, and plenty of exercise.

REMOVAL OF THE BOAR'S TUSKS

The removal of the tusks is easily accomplished by the stockman, and renders the animal less dangerous to manage. Snub to a post, by means of a strong rope, one end of which is noosed and applied over the upper jaw of the pig. Take a pair of strong pinchers, apply over the tusk close to the gum, close the pinchers tightly and give a sharp tap or two with a hammer to the exposed jaw of the pinchers. The tusk will be broken off easily and without hurt to the boar.

PARALYSIS

Paralysis of hind limbs in hogs is quite common, especially in shotes fed excessively of corn, while in the growing stage, from three to nine months of age.

This disease is better prevented than cured. Growing pigs should not have access to corn at liberty in common with the hogs intended for fattening. Feed more skimmed milk, alfalfa, green clover or roots, if possible. This will develop more bone and muscle and build up a stronger constitution.

TREATMENT

Keep the patient in a dry, well ventilated stall. Give a tablespoonful of Bovolax dissolved in a half pint of warm water. Repeat every six hours until the bowels are laxated freely. Rub the back from its middle to the tail twice daily with Elk's Electric Cream, morning and night, until relieved.

CANKER SORE MOUTH OF YOUNG PIGS

Canker sore is a very serious disease, occurring from the time of birth until a few weeks old, and unless attended to is either invariably fatal or stunts the pig's growth permanently. The disease will attack litter after litter and would thus seem to be contagious in its nature. Sore mouth, swellings of the jaw on which are light brown scabs, which later show deep cracks are seen. The scabs and cracks are found on the snout, extending over the head and even to the body and limbs. In some cases an ulcer will form at the end of the snout and eat away part of the nose; in other cases the ears may become affected and drop off. Dullness, loss of power in the hind limbs, and a tendency to walk on the fetlocks, disinclination to move and humping the back are frequent symptoms. If made to walk will squeal as if in pain; pigs refrain from suckling.

TREATMENT

The treatment is simple and effective if thoroughly done. The young pigs should first be attended to by dipping in over the head, in either of the following solutions, care being taken not to hold them too long under water and thus drown them:

- A. Permanganate of Potash—1 ounce.
Water— $\frac{1}{2}$ gallon.

This solution is practically non-poisonous and may be used fearlessly.

- B. Creolin—1 ounce.
Water— $\frac{1}{2}$ gallon.

The treatment should be given three times at intervals of two or three days. Remove the dirt from the snouts of the pigs as much as possible, so as to economize in the use of the drugs. The sow's udder should be washed, a few times with one of the solutions. Should ulcers form as described, touch them with a piece of silver nitrate or apply a little butter of antimony, with a small swab. Disinfect the farrowing pens with hot carbolic lime wash. This trouble is entirely different than that caused by the tushes of the young pigs, with which it is confused by so many pig breeders and farmers. A dose of raw linseed oil or Bovolax will be of benefit to give the sow.

RHEUMATISM IN PIGS

Rheumatism is common in damp stables, may be due to pigs burrowing in hot manure in winter time and then becoming exposed to the cold weather. Removal of the causes, a mild physic and five grains of salol in the feed twice daily will help overcome the trouble. If the joints are swollen apply Electric Cream morning and night.

WHITE SCOURS OF LAMBS (Infectious Diarrhea)

White scours is an acute, infectious disease manifested by profuse diarrhea. It attacks lambs shortly after birth or within two or three days, frequently affecting all the newborn in the flock. It is not common in range flocks.

CAUSE

A variety of micro-organisms has been found associated with the disease, but the most common of them is the *Bacillus colicomunis*. Dirty lambing pens or ground contaminated with the virulent organisms soils the udders of the ewe and the organisms are taken up by the lamb in suckling. Cold and rain weaken the young lambs and predispose them to infection.

SYMPTOMS

Symptoms appear in from one to three days after birth. The lamb stops suckling, is depressed, and lies down much of the time. The feces may be yellowish or grayish white and may be tinged with blood. They are fetid and fluid. Death occurs in from one to several days after symptoms are shown.

White scours is distinguished from simple diarrhea by its tendency to affect a large number in the flock at the same time.

TREATMENT

Affected lambs should be isolated and given 2 teaspoonfuls of castor oil and an internal antiseptic, such as salicylic acid in doses of one-third teaspoonful daily for several days. Anti-white-scours serum may be injected shortly after birth as a preventive. On farms where the disease has already occurred, ewes should be placed before lambing in clean, disinfected quarters.

JOINT ILL OF LAMBS

(Navel Ill, Septic Joint Disease)

Joint ill is an acute, infectious disease of newborn lambs which is characterized by swelling of the navel and joints of the limbs.

CAUSE

Several common disease-producing organisms may cause joint ill. Infection occurs principally before the stump dries, by way of the vein of the torn navel cord, which has become soiled by dirt or other material harboring the pathogenic organisms.

SYMPTOMS

Signs of the disease usually occur within 48 hours after birth. The navel cord swells, contains a purulent secretion, and dries slowly. The animal is dull, lies down a good deal, and loses the desire to suck. There is stiffness and swelling of the hocks, stifle joints, or knees. A purulent secretion may escape from an opened joint. There may be a general septic condition.

TREATMENT

Not much can be done in the case of badly affected animals other than to open and disinfect the navel stump and to nourish the animal artificially with milk. Recovery is rarely complete.

To prevent the disease place the pregnant ewes, shortly before lambing, in clean, disinfected quarters containing clean, fresh straw. Smear the navel cord of the newborn lamb with Elk's Absorbing Ointment as soon after birth as possible and repeat daily for two or three days. Tying the navel cord close to the navel is also advisable.

Diseases Common to Sheep

JAUNDICE (Icterus, Yellows)

Jaundice is a common disease of sheep, but is not often noticed except at slaughter. It is characterized by the yellowish appearance of the tissues of the body.

CAUSE

Jaundice results from various affections of the liver, flukes being a common cause. When the bile does not flow freely into the intestine the coloring matter is absorbed into the blood, and a yellowish coloration of the body results.

SYMPTOMS

The membranes of the mouth, nostrils and eye are yellowish. The urine is stained varying shades of yellow. On postmortem the carcass shows a yellow discoloration which often disappears after a day or two.

TREATMENT

A purgative, such as Bovolax, may be given, likewise opportunity for exercise.

ICTEROHEMATURIA

(Red Water, Malarial Fever, Jaundice)

Icterohematuria is a highly fatal, febrile disease which is apparently restricted to limited areas. It has been reported from certain valleys in Montana and from Colorado.

CAUSE

In Europe the disease has been attributed to a blood parasite of microscopic size. In this country its cause has not been definitely established.

SYMPTOMS

Severe cases are characterized by weakness; reddish or bloody urine; yellowish coloration of the membranes of the eye and nostrils; swelling of the head, ears, or neck; stupor, unconsciousness, and sometimes convulsions followed by death in from two to five days after symptoms are noticed. In mild cases no marked symptoms may be observed, but yellowish discoloration of the body tissues is seen on slaughter.

POST-MORTEM APPEARANCE

The skin and fat are yellowish in color, and the muscles slightly yellowish. The blood is pale, the liver is yellowish and easily crumbled, and the gall bladder is filled with yellowish-green or greenish-black bile. Kidneys are enlarged, soft, and contain a bloody or dark-colored urine. The bladder contains bloody or chocolate-colored urine. Yellowish or yellowish-green gelatinous liquid is found beneath the skin, between the muscles, or in the body cavities.

TREATMENT

Quinine, one-third teaspoonful twice daily, is recommended, also Bovolax, from one to three ounces. The disease is preventive by keeping sheep away from pastures where the condition exists.

PERITONITIS

Peritonitis is an inflammation of the membrane lining the belly cavity and covering the abdominal organs.

CAUSE

It is seen generally after castration of lambs or following inflammation of the womb in ewes. It results from infection.

SYMPTOMS

The principal symptoms are evidences of abdominal pain. There is plaintive bleating, grinding of the teeth, and the animal frequently draws the head around toward the flank. The temperature rises. The hind legs may be dragged stiffly and the belly may be tucked up. Fluid may be felt in the belly.

TREATMENT

The castration wound should be washed with antiseptics. Stimulating liniments or mustard water may be applied to the abdomen.

ASCITES (Abdominal Dropsy, Water Belly)

The condition known as ascites represents an accumulation of fluid in the belly.

CAUSE

Ascites may be present in several general diseases, and in peritonitis, internal parasitic infestation, or in debilitated animals, especially during pregnancy.

SYMPTOMS

Gradual enlargement or bulging of the belly is a common symptom. Manipulation of the belly will cause the fluid to fluctuate or move about. There is a dull sound on thumping the abdomen. Affected ewes may give birth to water-bellied lambs.

TREATMENT

The ailment which causes the condition should be treated. Give one-half teaspoonful of potassium iodid in a little water as a drench. The belly may be tapped and the fluid drawn off.

ANEMIA (Hydremia, Chlorosis)

Anemia is a condition in which the blood is deficient in either quality or quantity.

CAUSE

It is most frequently due to insufficient feed or to feed deficient in proteins and mineral substances, such as iron. It occurs often in animals grazing on marshy pastures. Ewes suckling lambs become anemic when the quantity or quality of feed is inadequate for their needs. Anemia is also associated with parasites.

SYMPTOMS

The visible membranes of the eye, nose and mouth are pale. There is dullness, weakness, and emaciation. A dropsical swelling forms under the lower jaw and may extend down the neck to the chest. The belly becomes dropsical. The wool is lusterless, harsh, or brittle, and falls off in patches. Diarrhea is present in the late stages. The animal may die from loss of strength after several weeks, or the disease may continue for months.

TREATMENT

Change of food or pasture is essential. A sufficient quantity of nutritious feed should be given; also administer iron sulphate (copperas) in from 8 to 15 grain doses daily. Arsenic in the form of Fowler's solution in from one-quarter to 1 teaspoonful daily and vegetable tonics, such as gentian or ginger, in from 1 to 2 teaspoonful doses are of value in aiding rapid recovery.

RICKETS (Rachitis, Leg Weakness)

Rickets is a disease of lambs in which the bones are soft and flexible from retarded hardening due to lack of proper mineral salt.

CAUSE

Failure of the bones to receive enough mineral salts, especially lime, may be due to faulty processes in the body, but is usually due to lack of lime salts in the feed and to lack of exercise. Suckling lambs may become affected if the mothers do not get feed enough, or if the feed is low in lime content. Some soils are deficient in lime, and feed grown on them is also deficient. Lambs closely confined, even if properly fed, may develop rickets.

SYMPTOMS

The symptoms are most apparent in the long bones of the legs. Nodular enlargements may be observed on the ends or sides of the bones, which are soft and porous. They are bent or bowed outward, inward, or backward. The spine may be curved also. Stiffness or lameness is present. The animal does not like to move about, lies down a good deal, or crawls about and kneels when eating. The second set of teeth is slow in coming. The licking or nibbling of walls is observed, and there is a desire for filth and for foul water.

TREATMENT

Lambs should not be penned closely, but should be allowed plenty of room for exercise. They should also have nutritious feed, grown on good soil. Lambs should be given new pasture or plenty of green feed, timothy hay, clover, alfalfa, pea hay, oats, linseed cake, or other feeds rich in lime and phosphates. Dams of nurslings should be well fed on such feeds. Chalk (calcium carbonate) may be given to ewes with suckling lambs, or to lambs, in doses from one-half to 2 teaspoonfuls daily, or sodium phosphate may be alternated with the chalk.

GOITER (Big Neck, Woolless Lambs)

Goiter is characterized by a swelling of the thyroid, which is situated in the throat just below the lower jaw. It is quite common in sheep in various regions. Lambs from affected flocks show absence of wool and enlargement of the throat. Many are born dead, and some die shortly after birth. Those that live are often unthrifty.

CAUSE

The disease is caused by lack of iodine in the thyroid gland. This appears to be due to a scarcity of iodine in the vegetation and water in certain districts. Where the pregnant ewe can not get iodine enough the normal growth of the fetus is arrested.

TREATMENT

In flocks where the disease exists pregnant ewes should be given potassium iodide daily for three months before lambing. One-half ounce of potassium iodide mixed with one-half ounce of milk sugar and dissolved in the drinking water daily is sufficient for 100 ewes.

RHEUMATISM

CAUSE

Rheumatism does not occur so often as a separate affection as formerly believed. Symptoms of soreness, lameness, or stiffness associated with various internal diseases are popularly termed rheumatism. Rheumatism, independent of other ailments, is generally due to cold drafts and dampness. It affects the muscles and to a less extent the joints. Young animals are usually affected.

TREATMENT

Protection against the causes, with application of National Electric Cream to the affected parts, will help restore the animal to health.

WOOL EATING

CAUSE

Wool eating is observed principally in winter, when sheep are confined to close quarters. It is often a bad habit, which, when started by one or more animals, is imitated by others. In other cases lack of elements in the feed may cause the habit.

SYMPTOMS

Lambs begin by gnawing the wool of their mothers, usually on the thighs and abdomen. Older sheep may select one animal and eat all its wool before turning to another. Wool eating may become general in the flock. A few lambs may become anemic, show digestive disturbance, or even die as the result of the formation of wool balls in a compartment of the stomach and the subsequent plugging of the intestine.

TREATMENT

Wool eaters and their victims should be removed from the flock. Animals should be turned out for exercise, and nutritious feed should be provided.

BIGHEAD

Bighead is characterized by a sudden swelling of the head and ears. The affection is not very widely distributed. It is found in Utah and the surrounding States, and greatest losses occurring in southern and central Utah, southern Idaho, eastern Nevada, and western and southern Wyoming. It is also seen occasionally in sheep brought as feeders from those regions into the Middle Western States. In such cases the disease occurs shortly after the arrival of the animal early in the autumn if the heat is excessive.

CAUSE

The definite cause of bighead is not known, though climatic conditions have much to do with its appearance. Sheep are usually affected during the early spring and early summer while being driven from the winter to the summer ranges, more commonly before shearing. Bighead appears to be most prevalent after a cold or stormy night, when the day following turns hot and the animals are driven fast in the hot sun, and when they are compelled to inhale a considerable quantity of alkali dust. It affects males and females alike, though it is seldom seen in young lambs. This condition affects sheep in much the same way as man is affected by poison ivy. The disease is not transmissible from one sheep to another or to other animals. All experiments with transfusion of blood or injection of serum from affected sheep to healthy ones were without results.

The disease of sheep in Europe, known as fagopyrism or buckwheat poisoning, is similar to bighead. In one experiment in America bighead was produced by feeding buckwheat and exposing the animals to the sun. In another experiment the results were negative. On the desert and on different parts of the trail sheep eat a number of plants that belong to the buckwheat family, and it is possible that the trouble may come from that source.

SYMPTOMS

The first noticeable symptom is that the animal begins to throw its head up and sidewise in a jerking manner. It is greatly irritated and shakes the head and tries to rub it. The animal walks aimlessly through the flock, often stamping its feet on the ground, and seldom standing still very long. The eyesight is affected, as the animal follows a direct line, sometimes running into other sheep and other ob-



Bighead of sheep, showing swelling of eyelid, face and ear (ear had been cropped). Scabs on ear, eyelid, and nose due to drying of exuded serum. Catarrhal, stringy discharge hangs from nose.
(After Buckley).

jects in its path. In that condition some of the sheep wander away from the flock and are lost, either dying as a result of exhaustion and starvation or becoming a prey to wild animals.

If the animal is watched after the jerking of the head begins, one can see the ears turn red and enlarge. At about the same time the cheeks show congested appearance. Ears and cheeks continue to enlarge to enormous proportions, the ears drooping as a result of their weight. After the swellings are about complete, small drops of serum of a light-yellow color begin to exude from them. The entire face becomes so swollen as to close the eyes, and in some cases the internal pressure of the serum forces the eyeballs out of their sockets. Fever is always present and shows itself early, the temperature ranging from 104° to 107° F. In the severe forms this occurs in from 30 minutes to one hour. The vision being obstructed, the animal can not see its feed and the lips, cheeks and tongue are so badly congested that the eating is impossible. In many cases the tongue fills the mouth entirely. In some cases there is a disturbance of the breathing due to pressure on the trachea and inflammation of the air passages. To some extent this may be due to excitement, and when in that condition the sheep, if allowed to, will continue to chase around until completely exhausted and will then lie down, usually never to rise. Others that are only slightly affected may recover. The skin often cracks or peels off the swelled areas and many animals lose the wool over the entire body. Sheep once affected are never as good as formerly, as they become unthrifty. Many of the ewes that carry lambs lose them.

POST-MORTEM APPEARANCE

Sheep killed during the early stages of the disease show petechiae (purplish spots) in the nostrils and all tissues of the head, trachea and lungs. There is an accumulation of serous or jellylike fluid around the eyes, in the cheeks, between the ears, below the jaws, and under the mucous membrane of the mouth and tongue.

When sheep die as a result of this condition, the jelly-like material is found in different parts of the body under the mucous and serous membranes and in some of the muscles. There are often small hemorrhagic spots along the intestinal tract and around the kidneys. There is a congestion and thickening of the walls of the lymphatics, with a swelling of the lymph glands. The blood circulation of the head in many instances is nearly shut off by the pressure of the swollen condition. The brain and spinal cord of the

dead animal contain an excessive amount of serum. The muscle tissue appears normal in most parts of the body except the head.

TREATMENT

Different medicinal substances were experimented with on affected sheep with the view of finding some specific that might overcome the trouble. The substances that do the animals most good are emollients, such as vaseline or olive oil, applied to the head. Whenever affected sheep have absolute rest and some protection from the direct rays of the sun and their heads are smeared with emollients they recover in a short time, while those that are not treated in this manner but are driven indefinitely without these precautions, become severely affected, many of them dying as a result.

The malady is prevented by handling sheep properly, not driving them too far or too fast on the trail during the heat, especially before shearing in the spring.

Sheepmen should not become excited when bighead develops in their flocks and cause the herders to rush the sheep over the ground, as they do where poisonous plants exist. Keep the animals cool so far as possible, and many great losses can be prevented.

SORE EYES

(Conjunctivitis, Ophthalmia, the Blinds)

CAUSE

Disorders of the eye may arise from a number of causes. Inflammation may follow injuries, or inclusions of dust, seeds, pollen, etc., or may accompany other diseases, such as catarrh. At times inflammation of the eye becomes prevalent in a particular district or region.

SYMPTOMS

The eye is kept closed, especially when exposed to light. Tears flow freely. At first the discharge is watery, but later it may become purulent. The eye membranes are swollen and red. The

eyeball may become clouded or milk white, and in bad cases it may ulcerate and rupture. Cataract and blindness frequently follow successive attacks of ophthalmia.

TREATMENT

Any foreign matter in the eye should be removed. The eye should be washed with 3 per cent boric-acid solution, or, better still, after washing the eyes with lukewarm water place several drops of 15 per cent solution of argyrol on the eyeball. Treatment should be given twice a day, the animal being kept in a dark place if possible.

STOMATITIS

(Necrotic Stomatitis, Sore Mouth of Lambs, Thrush)

Stomatitis is an inflammation of the mouth. It may occur in several forms, as catarrhal, aphthous, necrotic and mycotic.

CAUSE

Catarrhal stomatitis, or simple redness of the mouth, is due to irritants in the feed or to irritating mineral or poisonous substances. Aphthous and necrotic stomatitis are caused by micro-organisms. Mycotic stomatitis is caused by fungi or molds.

SYMPTOMS

In catarrhal stomatitis a diffuse of the redness of membranes covering the tongue, cheeks, and hard palate is observed. In the aphthous form patches of yellowish-gray false membranes, made up of cast-off fibrin and exudates, are found on the tongue, gums, and at other points in the mouth and throat. In the necrotic form small ulcers or decayed spots are present. The mycotic form also presents ulcerated areas.

In all forms suckling or the taking of feed is painful. Saliva dribbles from the mouth. A disagreeable odor is given off. Frequently the animal is stiff in the limbs, and the back may be arched. There is an unthrifty appearance and loss of flesh. In very young

lambs the disease takes a rapid and fatal course. Older animals generally recover.

TREATMENT

Separate the sick from the healthy. Lambs unable to suck should receive milk artificially. Older animals should have bran mashes, ground feed, or gruels. The mouth should be swabbed out daily with such antiseptics as compound solution of cresol, carbolic acid, or permanganate of potash in 2 per cent solution. It is also beneficial to dissolve 2 tablespoonfuls of borax in each pail of drinking water.

CHOKING

CAUSE

Choking occurs as the result of the lodging of a piece of root or dry, coarse feed in the gullet.

SYMPTOMS

Difficult breathing, head stretched out, attempts to swallow or to vomit, stoppage of rumination, and bloating suggest choking. Feeling along the gullet will reveal the obstruction.

TREATMENT

If the obstruction is near the mouth it may be fished out with the fingers or an instrument, or forced up by outside pressure. If farther down, a little linseed oil may be given and the material pushed toward the paunch by means of a rubber tube or stout looped wire. In obstinate cases immediate slaughter may be advisable.

INDIGESTION

(Impaction of Rumen, Atony of Stomach, Grass Staggers)

CAUSE

Indigestion results from the presence of other diseases; from feeding coarse, fibrous, indigestible feed with little green feed; from spoiled feed; or from overloading the stomach. The fourth stomach of lambs may become impacted with curdled milk.

SYMPTOMS

There is dullness, loss of appetite and rumination, bad-smelling eructation with passing at long intervals of bad-smelling, dry, undigested dung in small quantities. The left flank may be distended and feel doughy to the touch.

TREATMENT

Give purgatives, such as Bovolax in from 2 to 3 ounce doses, or castor or linseed oil from 3 to 6 ounces. One-half ounce of turpentine may be mixed with the oil. Work up the paunch with the hands over the left flank. When the animal begins to eat give succulent green feed for a few days.

DIARRHEA (Dysentery)

CAUSE

Common diarrhea, as distinguished from white scours of lambs and from diarrhea associated with specific disease, is due to disturbances in the digestive system from irritants in the feed, change to abundance of succulent feed, spoiled feed, exposure after shearing, or to the presence of parasitic worms in the intestine.

TREATMENT

The feed should be examined and regulated. Adverse conditions should be corrected. It is best to give a purgative, such as

Bovolax, 4 ounces, or castor or linseed oil, 4 ounces, to remove the irritating matter. If diarrhea persists, subnitrate of bismuth may be given in from one-half to 1 teaspoonful doses.

CONSTIPATION

CAUSE

Constipation may be a symptom of certain stages of general diseases. Simple constipation is due to digestive disturbances resulting from indigestible dry feed with insufficient water, wool balls, especially in lambs, or lack of exercise in stalled rams.

SYMPTOMS

The animal is dull, appetite is decreased, the mouth is dry, and sometimes colicky pains are evident. Attempts are made to defecate and the feces are hard and coated with mucus.

TREATMENT

Grown sheep should be given 4 ounces Bovolax in a quart of water. Lambs should be given a smaller quantity, according to size, or 2 ounces of castor or linseed oil. Succulent green feed should be fed for several days.

RETENTION OF THE MECONIUM

Retention of the meconium is observed in new-born lambs which fail to pass the dung soon after birth.

SYMPTOMS

There are evidences of colicky pains as a result of intestinal irritation.

TREATMENT

Give an injection of linseed oil into the rectum; also a teaspoonful of castor oil by the mouth.

PARALYSIS

Paralysis, is a loss of motion or sensation in a part of the body and generally depends upon brain or nerve derangement. Commonly, however, the term is used to express lack of movement, whether due to absence of nerve control, to extreme weakness, or to disinclination to move as a result of pain.

CAUSE

True paralysis in the sheep is present in the late stages of rabies, in parturient paralysis or milk fever, in meningitis, and in gid. Conditions resembling paralysis are found in a number of infectious and noninfectious diseases.

TREATMENT

Treatment depends upon the cause and follows the lines indicated for the diseases with which it is associated.

BLOODY URINE (Hematuria)

CAUSE

Reddish urine may be symptom of several diseases, such as anthrax, hemorrhagic septicemia, icterohematuria, inflammation of the kidneys or bladders, and urinary calculi (stones). It may also follow the eating of frozen feed or poisonous plants.

TREATMENT

The condition which causes a reddening of the urine should be discovered, if possible, and treated.

DANDRUFF (False Scab, Tallow Scab)

Whitish, yellowish or brownish-yellow greasy scales may be observed on the back, shoulders, breast, or neck. The scales consist of oily secretion and cells of the outer layer of the skin. Itching is absent, but the animal may pull wool from the affected areas.

CAUSE

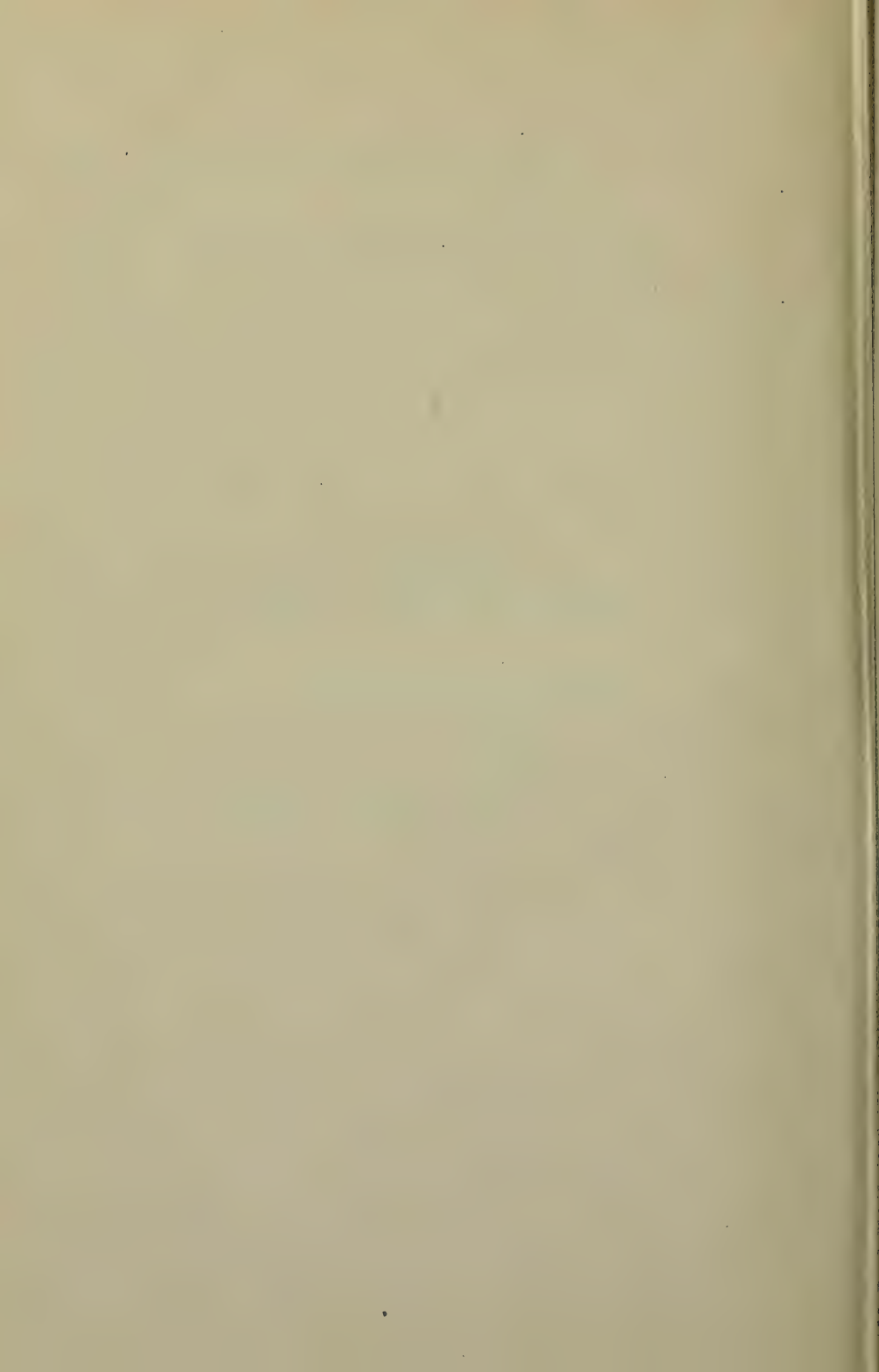
Frequently no cause is apparent, but animals in poor condition or suffering from other ailments are most often affected.

TREATMENT

The disease is not of common occurrence and is of small importance. Good nourishment and care of the skin generally correct the disorder.

BALDNESS (Alopecia, Falling Out of the Wool)

Baldness is observed as a symptom or as a result of several diseases, namely, scab, blue bag, metritis, eczema, ringworm, or dandruff. Its control rests upon the proper treatment of the disease from which it results.



CHAPTER XIV.

Diseases Common to Poultry

ROUP

Roup is a contagious disease of poultry resembling the early stages of a severe cold, the discharge being offensive. Isolate all affected birds, kill or use anti-toxin. Disinfect the hen houses thoroughly.

The following will aid in determining what makes a fowl sick, together with brief notes on treatment:

CHOLERA

Cholera is the result of overcrowding, filth, impure water and feed. Use a little soda, alum or carbolic acid, 30 drops to one quart of the drinking water, disinfect the runs with lime, also the house.

CANKER

Canker is the result of dampness and filth. Powder mouth and throat with burnt alum, disinfect the quarters.

APOPLEXY

Apoplexy is the result of overfeeding and lack of exercise. Give a teaspoonful of Castor Oil, vegetable diet, cold water to head.

SOFT SHELLED EGGS

Soft shells are the result of overfeeding or lack of lime in the food. Give oyster shells, cut bone and a vegetable diet.

LEG WEAKNESS

Leg weakness is the result of in-breeding and overfeeding, lack of bone forming food and grit. Give one grain of quinine daily, grit, vegetable diet, and cut bone.

SORE EYES AND PIP

Damp houses.

BUMBLE FOOT

Bumble foot in poultry is due to too high roosts, causing bruising of the feet and the formation of an abscess. Bathe in hot water, lance and let out the pus, and remove the cause.

DIARRHOEA

Damp houses, filthy runs and houses, bad feeding. The same treatment as for cholera.

CROP BOUND

Overfeeding and lack of grit. Give castor oil and milk and knead carefully.

Unless your poultry are valuable stock, kill at once if diseased. Doctoring is expensive in time and money.

POULTRY LICE

Poultry lice cause intense itching and loss of condition in the host, and should not be permitted to exist in any up-to-date poultry house. Cases are cited in which animals, (horses, etc.), have become affected

when the poultry roosted with them. The removal of the poultry and the use of insect powder, if in winter, or the creolin lotion in summer, together with the plentiful use of kerosene or hot lime wash, will overcome the trouble. Use sulphur lavishly or insect powder in the nests. Hen houses should be thoroughly treated twice yearly with hot lime wash, the roosts and nests being plentifully dowsed with kerosene. A teaspoonful of corrosive sublimate to each bucket of wash will kill and keep lice out of the henhouse.

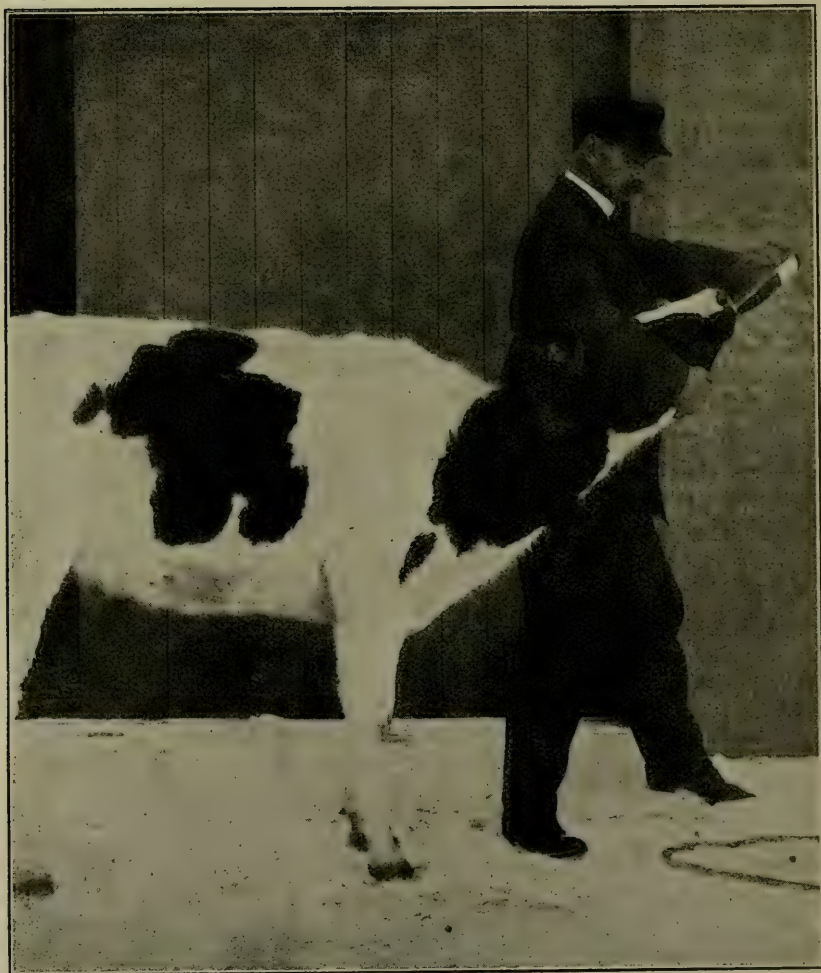
CHAPTER XV.

Practical Application of Medicines and Home Remedies

Almost every farmer or stock owner has an occasional opportunity to administer medicine of some kind to his cattle in case of sickness or otherwise. For this purpose various methods have been applied, such as passing a piece of garden hose down the throat of the patient to avoid the medicine going down the trachea (wind-pipe) and into the lungs, where it usually sets up a severe irritation which results in congestion or inflammation of the lungs. The piece of hose is passed down the throat far enough to pass the glottis or valve which protects the trachea, so that the medicine will surely pass down into the regular alimentary canal. At the upper end of this hose is attached an ordinary funnel, so that the medicine can easily be poured into the hose. This practice looks reasonable and simple, but does not work quite so easily as it appears to, for the animal will always fight when you attempt to insert the hose, and it is only natural for her to do so, as it is far from being what she is used to.

The less variation you make from the usual practice of treating an animal the better she takes to it. The simplest method is the most successful method. When using the hose and funnel you must confine the animal by fastening her in a stanchion or another secure place of confinement, where she cannot offer much resistance.

The most common and probably the most practical way is the one displayed at the head of this article, where the patient is treated kindly by soothing words and gentle petting until she is convinced that no harm shall befall her. The animal is not confined at all if of a gentle disposition, and if the contrary, it is best to confine her in her own stanchion, in the barn where she feels most at home and will be content. After having your medicine well diluted with water, which is a very important point, in administering medicine to ruminants, or animals with four stomachs, such as the cow, sheep and goat, you place it in a long necked wine bottle and take your place on either side of the head, passing your arm around the opposite side anterior to the horns and grasping the opposite lower jaw firmly, thereby pressing her head



Practical method of administering medicine to cattle.

tightly to your body so she will have no chance to swing it from side to side. Raising the head as shown in the illustration, you can now easily pour the medicine down into her mouth without exciting the patient and she will offer little or no resistance.

METHODS TO BE AVOIDED

Never pull out the patient's tongue while you are giving medicine, as she needs it to perform the act of swallowing to prevent the medicine from going down the wrong channel. The practice of having an attendant pinch his thumb and finger into the nostrils should be avoided above all, as it interferes with respiration and excites the animal, whereby it makes an effort to breathe through its mouth, thus leaving the glottis open, which admits the fluid into the trachea, down into the lungs and frequently leads to fatal results.

THE NECESSITY OF FREELY DILUTING YOUR MEDICINE IN WATER

Owing to the complicated anatomical construction of a cow's stomach, which is divided into four separate stomachs or compartments, it is absolutely necessary to dilute your medicines largely, say at least in a quart or two of water for each dose, so that the fluid will pass into the reticulum or second stomach, which is the natural receptacle for fluids. If it were given in the form of a mass, bolus or semi-mass, it might pass into the rumen with the unmasticated food, where it is liable to be returned to the mouth during rumination, and its peculiar taste would prompt the patient to throw it out, or drop it from the mouth, without its having a chance to be taken into the system where it should bring about its desired effect.

MODE OF GIVING MEDICINE

Animals are all more or less difficult to give medicine to; therefore, the stockman must be careful to give it in such a way as to annoy the patient as little as possible and yet avoid wasting the medicine. Different methods have to be followed with the various farm animals. The stronger animals, such as horses and cows, require a certain amount of restraint in order to give the drugs successfully.

To get the effect of medicine they must be introduced into the body.

Medicines are taken into the system by three channels:

1. THROUGH THE DIGESTIVE TRACT, in such cases being given by the mouth, in the form of powders, drenches or balls, and per rectum, by injection into the bowel.

2. THROUGH THE ORGANS OF RESPIRATION, causing the animal to breathe the drug, this is known as the inhalation method, and is useful in such diseases as strangles (colt distemper) or worms in the air passages (sheep and calves).

3. THROUGH THE SKIN, the medicines being absorbed. There are subdivisions of this, the absorptive method, the first one of which is employed by stockmen, the other being used by the veterinarian whenever necessary. They are:

- (a) Epidermically, rubbing into the skin (epidermis) the general way of using blisters.

- (b) Endermically, the drug being applied under the skin. The rowel and seton are used in this method.

- (c) Hypodermically, the placing of the drug or serum under the skin or into the tissues by the aid of the hypodermic syringe. At the present time the professional man uses this method in the giving of cocaine, morphine, etc., the testing of animals with tuberculin and mallein, when performing preventive inoculation for blackleg, and in the use of serum.

GIVING MEDICINES TO HORSES

1. Powders, if not objectionable to the animal, may be given in the feed. When distasteful may be mixed with molasses and placed on the back of the tongue with a spoon or wooden paddle. The latter way is a nice method of giving drugs to horses suffering with sore throat, etc.

2. Drenching is the old way of giving fluids, and is a useful way when large quantities are to be given. Back the horse in a single stall and raise the head by means of a stable fork placed through the nose band of the headstall, (halter), or better take a hame strap, buckle it, thus making a loop; slip into the mouth just back of the front upper teeth, then raise by means of a rope or fork until the teeth are a little above the horizontal. The medicine which is in a tin, hard rubber, or even a strong glass bottle or funnel, is poured in from the off side. The person drenching steadies the head with his left hand on the headstall, which should be slack enough to let the mouth open, and slowly pours in about a half cupful at a time. **IF ANY ATTEMPTS AT COUGHING ARE MADE, AT ONCE LET THE HEAD DOWN.** Never seize the tongue or pinch the nostrils when drenching. If the animal does not swallow readily tickle the roof of the mouth with one or two fingers. In some cases a person giving the drench may get on the horse's back, sitting well forward, draw the head round to the off side by the halter with the left hand and drench with the bottle in the right hand. The application of the rope or the noose twitch will often be sufficient.

A method sometimes used in drenching sick horses is to give the medicine while the patient is lying down. The operator must be agile, strong and watchful. A halter is placed on the animal and as soon as he lies down the halter is grasped tightly on its under side so as to throw the nose of the horse in the air, the poll being held tight to the ground. The operator will be at the back of the horse and will place his knee on the patient's neck, and then pour the drench in slowly and at short intervals. If necessary the animal may be thrown and the head tied to a surcingle. Whenever it is desired to restrain a horse and keep him down by holding his head, the poll should be held to the ground, the nose up, the back of the head being drawn well back.

Fluids in any quantities may be given with a metal or a hard rubber 2 ounce dose syringe, (a syringe with an 8 or 10 inch long nozzle is preferable). This is a very clean, nice method, one which is now almost exclusively practiced, as it is practical and the patient is sure to get all of the dose. The operator stands in front of the animal, with

his left hand on the animal's nose, the patient being held firmly by an attendant or backed into a single stall. The long nozzle of the syringe is then inserted into the mouth through the left dental space and passed straight down the center of the tongue its full length when the dose is discharged. This is much safer and more satisfactory than giving balls. Fluids can also be given in gelatin capsules.

BALLING—Considerable dexterity is required to properly ball a horse. To do so the operator stands in front of his patient and with his left hand gently draws the tongue forward two to three inches. The right hand carrying the ball resting on the second and fourth fingers, the third finger on top of it, is carried back in a straight line to the root of the tongue, where the ball is left, the tongue at once released and the head withdrawn. A few sips of water may be given and, if properly done, the ball will be seen to travel down the near side of the neck.

SHEEP

Sheep may be drenched by backing into a corner, getting astride of the animal. Elevate the head, slightly with the left hand, with the right hand pour in the fluid. For lambs and sheep difficult to drench, the operator should set the animal up on its romp, with its head between his knees, the medicine can be poured in with little risk of choking.

PRECAUTIONS—Cattle and sheep are easily choked when drenching, therefore, it must be remembered that to avoid loss, only small quantities should be given to be swallowed at one time, and if coughing occurs, due to some of the medicine going the wrong way, the head must at once be lowered, so that any fluid in the mouth may run out. I have known of many animals killed by neglect of these precautions.

PIGS

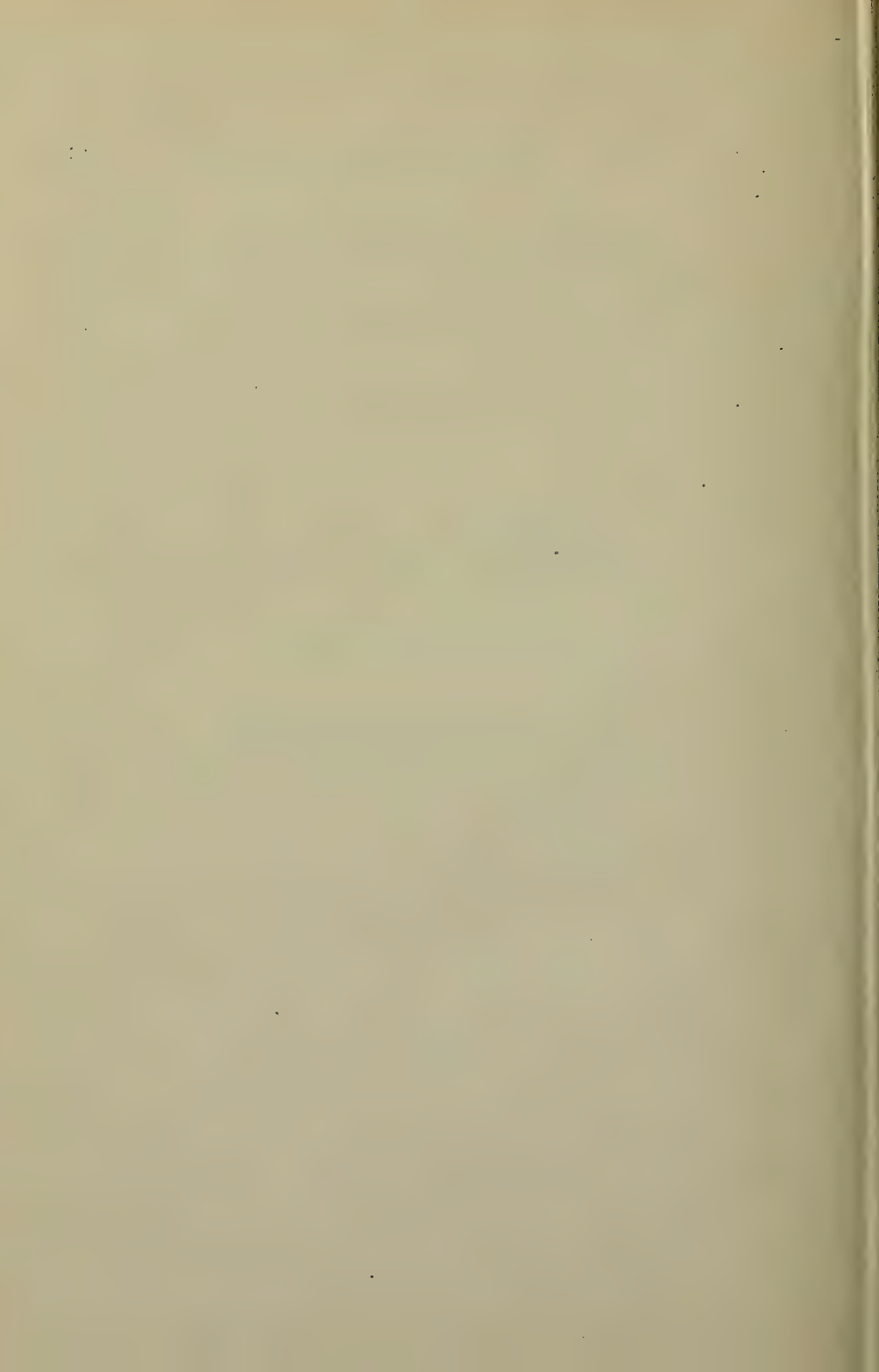
Pigs may be drenched by putting a noose over the upper part of the snout. When the animal will hang back on its haunches and squeal, the medicine can be spooned in slowly. Pigs will take oil, salts and other medicines if given mixed with sweet milk in the trough.

SIMPLE FARM MEDICINES

The up-to-date stockman will have his chest of medicines for his stock, not with the idea of treating anything or everything, but for the purpose of meeting unexpected conditions and for the treatment of simple diseases, such as are herein described. Before any person can use or prescribe medicines intelligently it is essential that they understand the actions and doses of those medicines; not only is it essential that the stockman know something about medicines, and that something well; he must also know the best methods of giving such medicines. The kernel of the matter is that the stockman must be an ANIMAL NURSE, in order to render efficient service when his stock are sick. Medicines are often classified according to their actions, each class being given a distinctive name. The utility of such a classification is at once seen, e. g., an animal is sick, the owner instead of being told to use a specific drug such as iron, is advised to use a tonic (feritone). Running over the list of drugs in his farm medicine chest, he remembers that he has such a drug there with a tonic action, and uses it, whereas, had he not understood the term, the animal would have had to go untreated.

With a view of relieving the farmer or stockman from the necessity of becoming an apothecary, the writer simplifies his treatments by advising as few drugs as possible and only those which are the latest and most reliable for each particular case. Thus the stockman is not compelled to keep on hand a small drug store and must not necessarily also be a therapist.

NOTICE—When recommending a remedy, the writer frequently specifies some specific remedy, such as National Bovolax. This is to assure the readers that the said drug is recognized by the "National Live Stock Sanitary Association", as being the most reliable and effective agent for the specific purpose for which it is being prescribed. The Elk's brands of veterinary remedies are also recognized by the "National Live Stock Sanitary Association". They are reliable and up-to-date. The stockman can safely add such as are here recommended to his list in the farm medicine chest.



CHAPTER XVI.

Miscellaneous

DISINFECTION OF STABLES

This is a very important subject for the stockman to understand as he can by this means do more to limit and stamp out contagious diseases than by any other method. Carbolic acid, bichloride of mercury (corrosive sublimate), chloride of zinc and numerous other antiseptics, including creolin, chloronaphtholeum, zenoleum, may be used for this purpose. Empty the stables, then burn up all bedding used in the infected barn. Sprinkle the floors with sawdust which has been soaked with a ten per cent solution of carbolic acid, or a 1 to 1,000 solution of corrosive sublimate, letting it remain for twenty-four hours, then rake up and place with the manure. Sprinkle the floor with chloride of lime or some of the antiseptics mentioned; flush out the drains with the same antiseptics. Take a ten per cent solution of hot soft soap and water and scrub out stalls, mangers, feed boxes, etc., when dry use a knapsack sprayer and apply hot carbolic whitewash (crude carbolic enough to make a three to five per cent solution) over the walls and ceiling. Sulphur is sometimes burned in stables, for which purpose one pound of sulphur is needed to every thousand cubic feet.

Harness should be washed with a hot soap solution and oiled afterward. Disinfection is rendered much easier if the floors of the stables are of cement and the fittings of iron. After the disinfection allow lots of light and pure air to enter and do not allow piles of manure, etc., to accumulate in the stable.

THE HORN FLY OF CATTLE (Grubs)

The Horn Fly is very common in some seasons. It is a little, black fly, often found in clusters around the horn base. For its prevention bi-weekly applications of fish oil containing carbolic acid, one ounce to the gallon of oil and applied along the back and around the horns. Its effects are too well known to need description. The use of this mixture will also tend to keep off the *warbly fly*, the effects of which are seen in the warbles found on the backs of cattle. When removed the warble

or grub, (larvae of the fly) should be at once destroyed. Hides are often materially injured owing to attacks of this fly during the life of the animal. Four ounces of flowers of sulphur, one gill spirits of tar, train oil one quart, mixed and applied along the spine once a week will tend to prevent the ravages of this fly.

EXTERNAL PARASITES (Lice)

Lice are the common epidermic parasites of small insects which infect all farm animals, including dogs and poultry. They make their presence known by causing an intense itching of the skin, which induces the animal to rub or scratch the parts, often to such an extent as to render the parts bare and even draw blood. The lice multiply rapidly and soon become general in a herd. A herd thus affected cannot thrive until the little mischief-makers are all destroyed.

TREATMENT

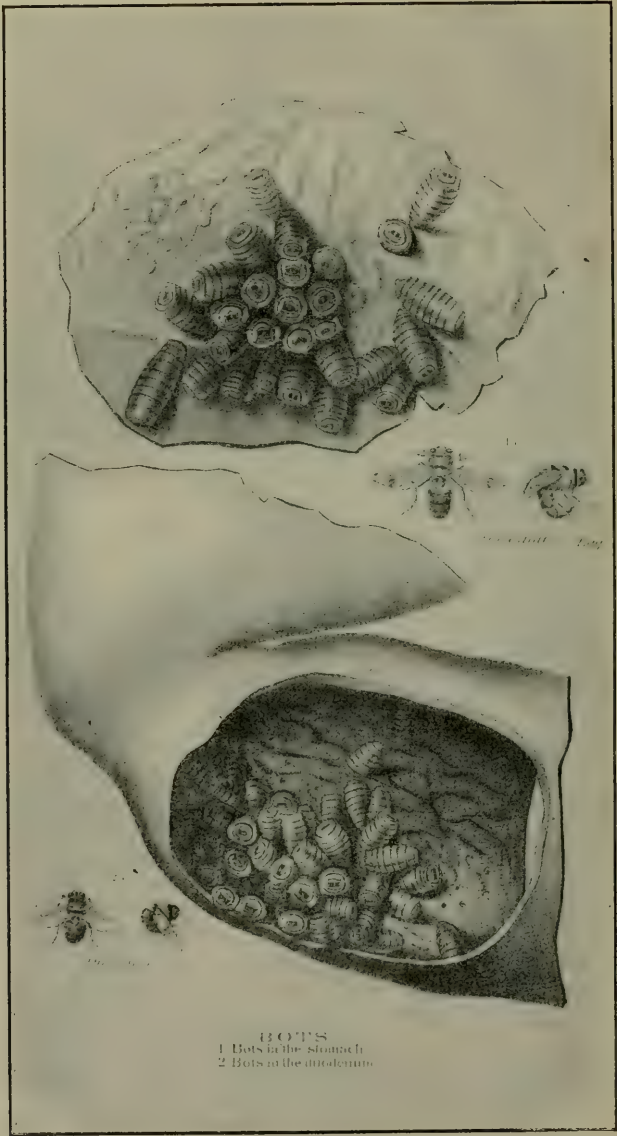
The most convenient way to destroy the parasites is to place a few ounces of Louse and Fly Destroyer in a common fly spray and spray the animals once daily for three or four days or until relieved. This is the most effective way to destroy lice or flies and is not expensive.

INTERNAL PARASITES (Bots)

BOTS are the larvae of gad-flies, which lay their orange-colored eggs on the legs and between the jaws of horses. The eggs are licked off or fall into the feed and are thus swallowed by the horse, where they are hatched out in the stomach, where the larvae (bot) will stay for months, later being passed out in the dung to be hatched out as the gad-fly, so well known to horsemen and so much dreaded by their charges. It is doubtful if any horses in this country are free from bots, post-mortems invariably showing them to be present in varying numbers. The preventive treatment is to destroy the eggs. A cloth dampened with kerosene will tend to remove them. The effect of bots depends on the number present; if few, no ill effects are noticed; but if many, the horse is unthrifty, suffers from indigestion and may die from their effects on the stomach walls. They are fastened on the stomach walls very firmly and it is doubtful whether medicines have much effect. Turpentine, two ounces in one and one-half pints of new milk three mornings in succession, given on an empty stomach, will probably be as effectual as any drug. Copperas powders, owing to their tonic and astringent effect on the mucous membranes, will also be beneficial; tartar emetic, two drams in food daily for two weeks might be used in place of the drench.

PIN WORMS

PIN WORMS are small, thin, whip-like worms, one to one and one-half inches long, found in the posterior bowel, (rectum). While producing little disturbance of the general health, they manifest themselves as a rule by a yellow, waxy matter around the anus and by rubbing of the tail and hind parts. The worms may also be found in or passed with the excrement. The treatment is mainly local, by means of injections. First give an injection to clean out the bowel, and follow it with one of salt and water, one ounce of salt to one-half gallon of water; or a decoction of quassia chips may be used. If the injections fail to remove them, internal treatment will be needed.



BOTS
1 Bots in the stomach
2 Bots in the intestine

ROUND WORMS

ROUND WORMS are the larger kind usually found in horses, and when full grown are six to fourteen inches in length. They usually inhabit the small intestines; when many are present the animal loses condition, gets pot-bellied, has a rough coat, capricious appetite, shows a tendency to eat dirt, with occasionally a colic or diarrhoea, and presence of worms in the dung. The riddance of a horse of these parasites is not very difficult if a thorough effort is made to dislodge them. In order to get the best effects the animal should be starved before giving the drugs, which may be as follows:

National Vermifuge—1 tablespoonful.
Common Charcoal—3 tablespoonfuls.

mixed and given in the feed three times a day, followed by a dose of aloes, or:

Two ounces turpentine, one pint new milk, given three successive mornings on an empty stomach. The fourth morning give two drachms Tartar Emetic in a pint of raw linseed oil; if the horse has to be worked steadily the following powders will be useful:

Powdered Copperas—1 ounce.
Powdered Bluestones—1 ounce.
Powdered Sugar—2 ounces.

Mix and make into twelve powders, one to be given twice daily in the feed.

Worms are not common in cattle; in sheep are the frequent cause of losses and occasionally so in pigs.

STOMACH WORMS, usually found in lambs, are the most serious and most common. They are very small, one-quarter to one-third of an inch long, pale reddish in color, and are found in the fourth stomach only. Lambs affected are thirsty, pale in the eyes, lose weight, are dull, lose their appetite, may scour or eat dirt. Benzine or gasoline, two to four drachms in six ounces of new milk, given three mornings in succession on an empty stomach, have been highly recommended; creolin and milk in similar doses may also be used. National Vermifuge for sheep should be mixed with plenty of salt and placed in the salt troughs.

TAPE WORMS when present cause symptoms similar to those described for stomach worms. In addition, paleness of the skin and

mucous membrane, brittleness of the fleece, loss of flesh, voracious appetite, pieces of the tape worm in the dung; they are more prevalent in wet seasons and on damp pastures. Turpentine in raw milk and a decoction of pumpkin seeds are old and tried remedies; Santonine, as much as will lie on a five-cent piece, or tannate of pelletierine, three to five grains, are new remedies recommended. The best preventive treatment is to change the pastures and crop the old ones for a few years.

LONG WORM

A long worm is sometimes found in the intestines of pigs. Unless in considerable numbers they seldom cause much trouble. If suspected give turpentine in milk or oil, or oil of wormseed.

DISEASES OF YOUNG STOCK

CONSTIPATION is a common trouble in foals the first few days after birth. The food of the dam just previous to delivery not having been of a laxative nature, or the first milk (colostrum) not being taken by the foal, will thus account for this trouble in the majority of cases. Calves, lambs, and pigs are rarely troubled as they usually get the first milk. The signs of this trouble are straining, rolling, lying on the back, colicky symptoms, the belly tucked up; the foal sucking in a half-hearted way and the non-passage of feces are also reliable indications. The preferable way to overcome the trouble is to diet the dam, changing to food of a more laxative nature, e. g., bran mashes with flax-seed, as the use of purgatives on a foal of such a tender age is extremely dangerous. The finger may be oiled and introduced into the rectum, the contents of a dark, tarry ball-like nature removed; or a cone of soap may be placed in rectum and left there. The injection of one-half ounce of glycerine or two ounces of raw linseed oil in two or three ounces of water is very useful and may be used in preference to the soap or oiled finger. Lambs should be watched their first two weeks of life as the feces tend to stick to the wool around the anus and thus form an obstacle to the passage of the dung.

SCOURS (or Diarrhoea) is as a rule more or less serious, the contagious form in calves, termed calf cholera or dysentery, being especially so. The common cause of Scours is the food, either as to its quality, quantity, or regularity in giving it. In foals the disease is often due to the use of purgatives to overcome the preceding trouble (constipation); the drinking of warm, stale milk, the mare being worked and the foal only allowed to suck at long intervals; too rich or too much milk. We may then consider scours in any animal a symptom of indigestion, not as a disease in itself; the looseness of the bowels being one evidence of Nature's endeavor to overcome the trouble. In calves especially scouring is due to overfeeding, or feeding at too long intervals, and the use of milk of a poor quality. Lambs sometimes scour if the ewes are on pastures of a watery nature, green oats, etc. The disease is soon evidenced by colicky pains, refusal of food, scour smelling passages, the passage of watery feces with rapid loss of strength. In some cases curdled milk is mixed with the dung.

The causes being known, the first thing in the treatment is to re-

move those causes; the disease being seen in its earliest stages, give as one dose:

Elk's Anti-Scour Compound—1 dram.

Castor Oil—1 ounce.

The dose may be larger or smaller depending on the size of the animal.

Lime water in one or two ounce doses fed with the milk is useful in overcoming acidity and the consequent indigestion. Foals affected with indigestion due to the dam's milk being too rich, should have the supply limited, the mare being milked on the ground. The rich condition of milk for calves can be overcome by diluting the milk with warm water. Raw eggs with brandy and several other drugs are often recommended. Subnitrate of bismuth in suitable doses is a very valuable drug when the digestive tract of young animals is in an irritable condition.

NAVEL-ILL

NAVEL-ILL is rather a common disease of foals, occasionally of calves and lambs. The measures to be adopted by the stockman are those of a preventive character, such as dressing the navel with Elk's Absorbing Ointment; have the mare to foal on the grass and if the disease has appeared make a thorough disinfection of the foaling or calving box or the lambing pens, as the case may be. The symptoms shown are feverishness and constipation, loss of vigor, being quite dull and reluctant to suck, lameness with swelling of one or more joints. The latter symptoms, lameness and possibly a swelling of a joint, mislead the average stockman. He thinks the foal has been stepped upon by the dam, when really the cause is the introduction of germs by the navel. The navel, instead of drying up and dropping off, remains on and is clammy to the touch and tap-like in appearance. The later stages, exhibit more swelling of the joints, formation of abscesses and exhaustion, usually terminating in death. The urine may trickle from the navel in this disease. The early employment of a veterinarian will only be profitable; the death rate is high on account of skilled treatment being given too late. Some authorities consider this trouble as caused by the same germ as that causing contagious abortion. A good preventive, however, is to smear the navel with Elk's absorbing Ointment, this will disinfect the navel and prevent the absorption of toxic germs.

EXCESSIVE SALIVATION

See Faulty Teeth.

HOME-MADE STOCK TONICS

Every farmer can prepare his own stock tonic, save 150 per cent and have a better article than can be purchased on the market at enormous prices. Besides, you can make it twice as strong and will know better how to arrange your food rations when you know exactly the contents and action of the tonic.

See—How to Produce More Milk, Etc.—Page 230 and Page 55.

THE SECRET OF PRODUCING MORE MILK FROM COWS, MORE BEEF FROM CATTLE, MORE MUTTON FROM SHEEP AND MORE PORK FROM SWINE

The problem is best solved by taking for example a milch cow, place her on ordinary dry stable food for three or four months, then turn her out to pasture for the same length of time under equal environments and circumstances. Then compare the yield and general conditions of health and you will find yourself from 40 to 60 per cent ahead financially in favor of the natural grazing while on pasture. This is accounted for in many different ways; first, when the cow can partake of natural food and water at liberty she will govern the supply and demand of the system herself. If she has taken too much of one kind of grass or herbs, she will seek nature's remedy to counteract it without delay. Secondly, should any of the vital organs for some reason or other become disordered, there appears to be a natural instinct in animals to seek their own remedy. Every plant, shrub or tree, has its special physiological action upon the animal system and the cow seems to know which one of them suits her case. In highly nourished animals under artificial surrounding there is a frequent sluggishness of the liver due to hyper-nutrition and the constant feeding of one kind of food for a long period. This leads to congestion of the liver and sometimes to inflammation or other disorders if not noticed by the owner and counteracted in time. The result will invariably be a considerable loss of the milk yield and sometimes drying her up entirely. These conditions do not happen when the cow is on pasture no matter how rich the food, as the cow will seek to help herself. In this country the dandelion (or buttercup) cuts an important figure in pastures. It is one of the most effective liver regulators for herbivorous animals. Some of us have watched a cow dig into the earth and eat clay. This is an indication of a sour stomach or indigestion and she is seeking nature's remedy to counteract it. The writer could enumerate many of these advantages if space would permit, but will say that every intelligent and successful feeder watches the needs of his stock and supplies their wants while stable feeding. For this purpose a stock tonic which contains the ingredients of which his stock are deprived, while confined to the stable and deprived of God's green grass, is absolutely necessary in order to keep up the yield, general health, and prosperity of the animal body. The writer has made this subject a special study and has found that a simple tonic which can be added to the regular daily food ration with the object of supplying the above wants and keeping farm

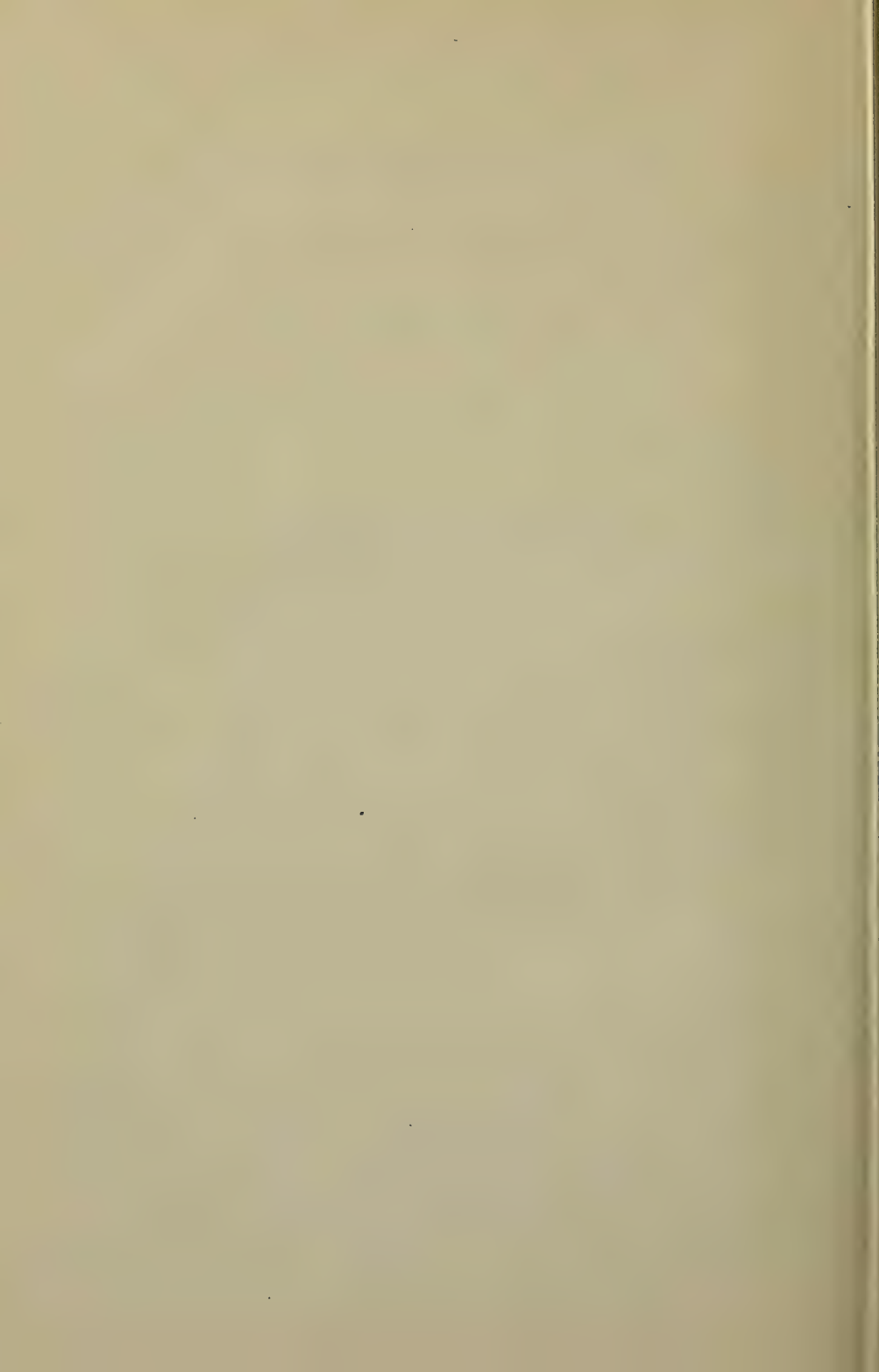
animals as thrifty and healthy while stable fed, as they would be when given their liberty at pasture. This tonic you can prepare yourself by taking:

Old Process Oil Meal.....	85 lbs.
Common Salt	10 lbs.
Sanguitone Compound	5 lbs.
<hr/>	
Total	100 lbs.

Mix well and give 1 tablespoonful in food twice daily to adult horses or cattle; smaller animals take less according to size and age.

Many of our readers have given it a trial and speak very highly of it. It is inexpensive and should be kept in use during the entire stable feeding season.

Sanguiton is a new and most effective compound which contains all the medicinal ingredients required by nature to substitute green grass and natural pasture conditions. If your druggist does not keep it, write to the author of "Rural Veterinary Secrets" and he will see that you are supplied without delay.



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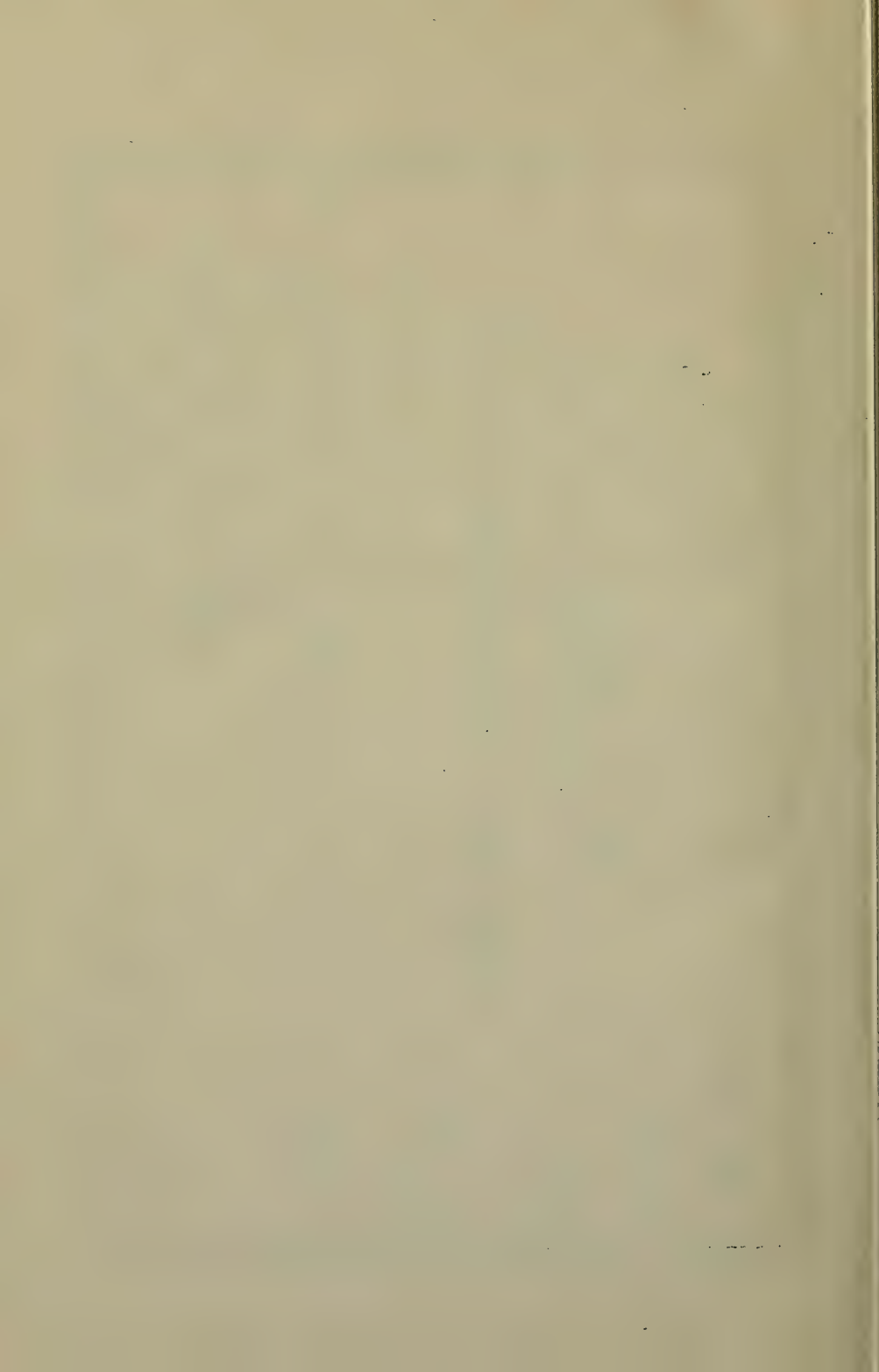
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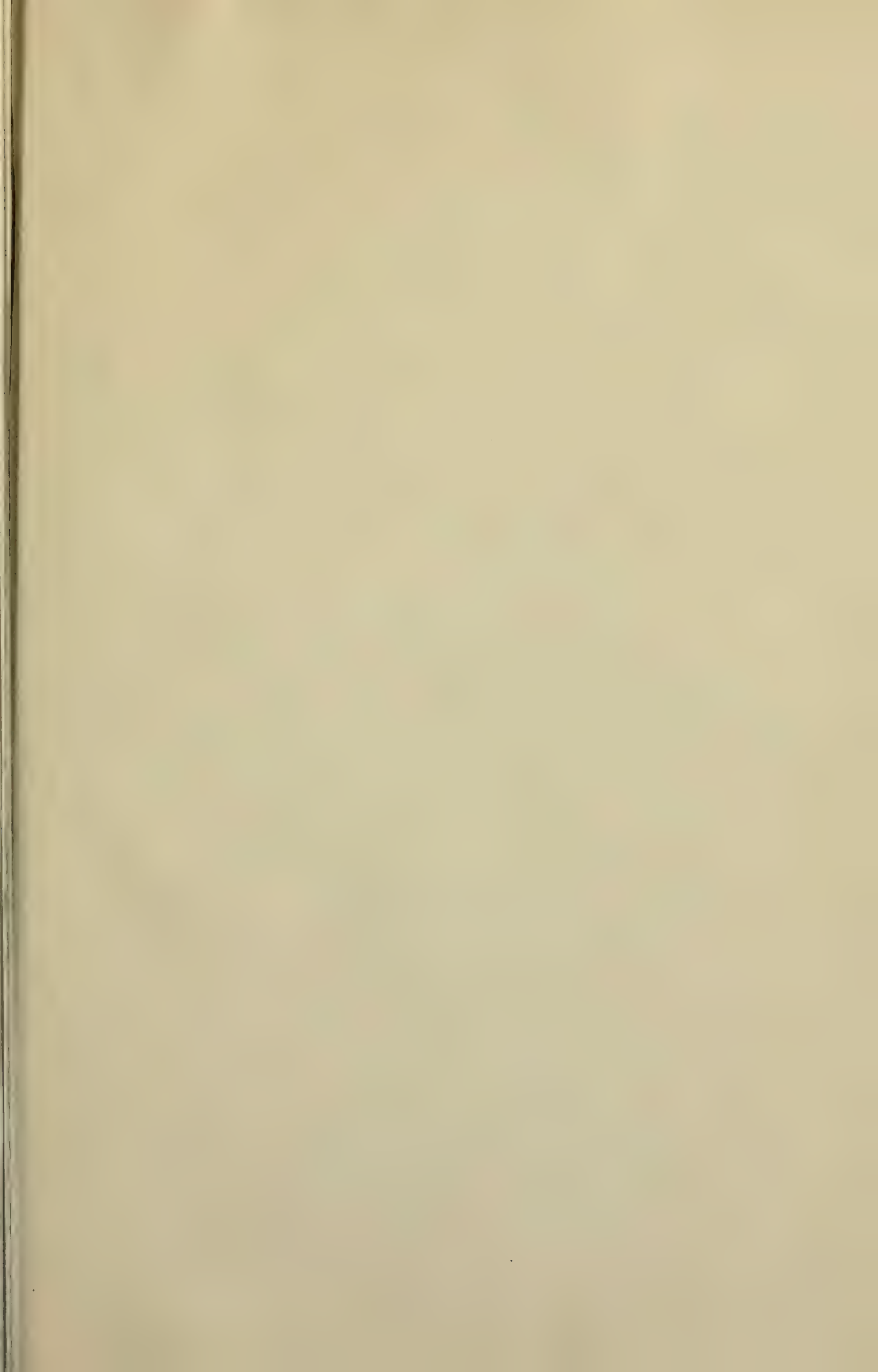
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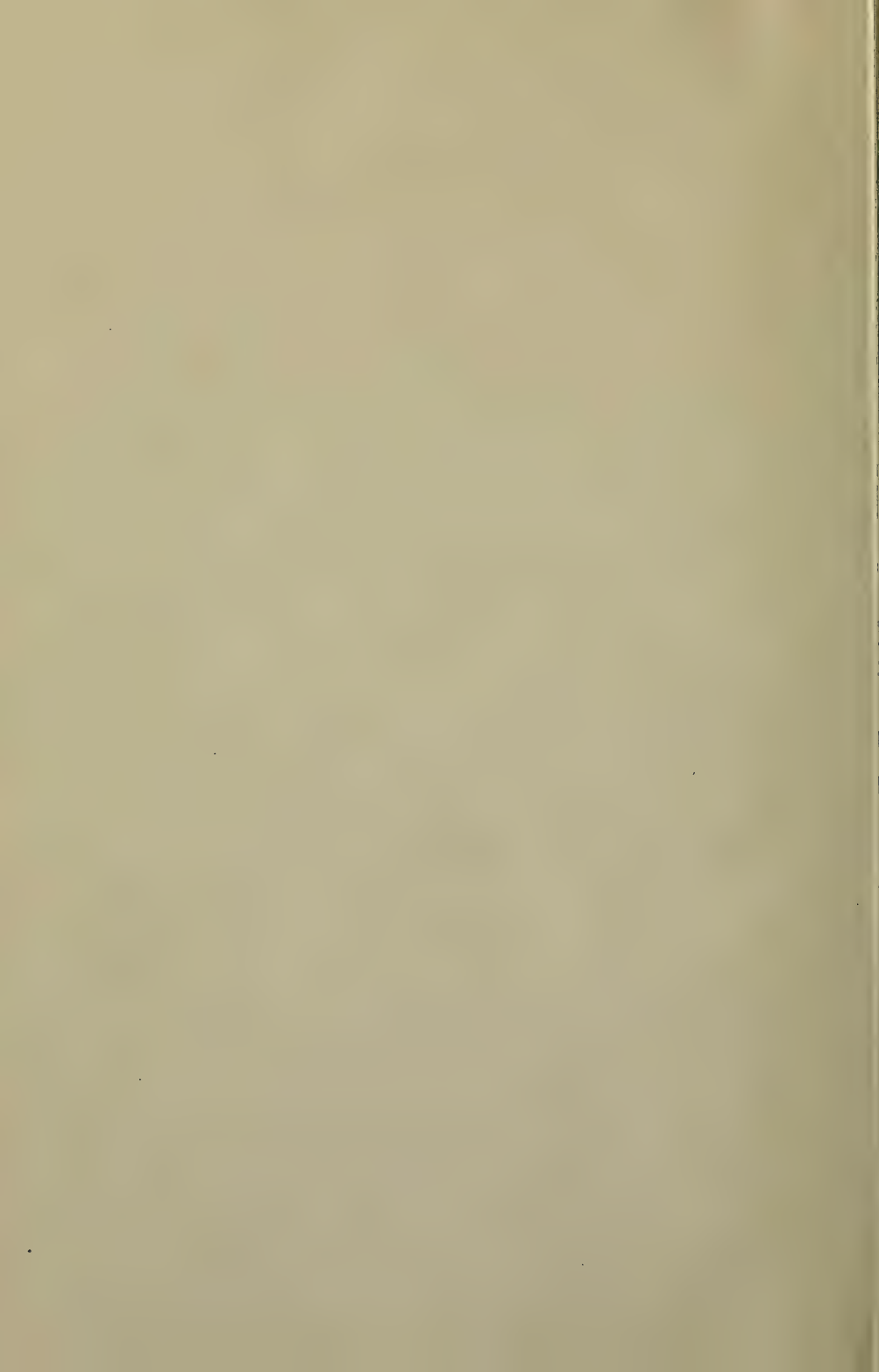
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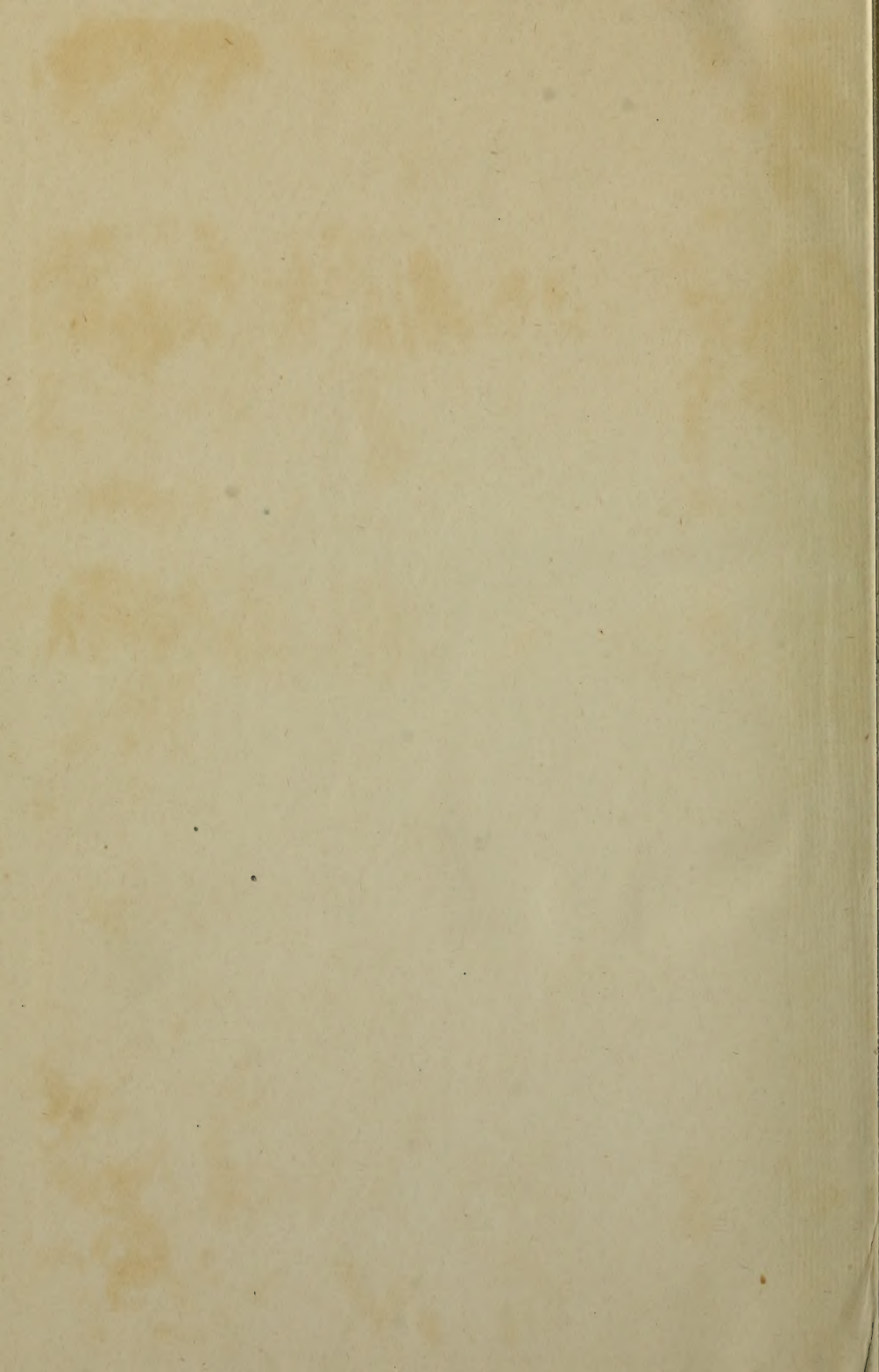
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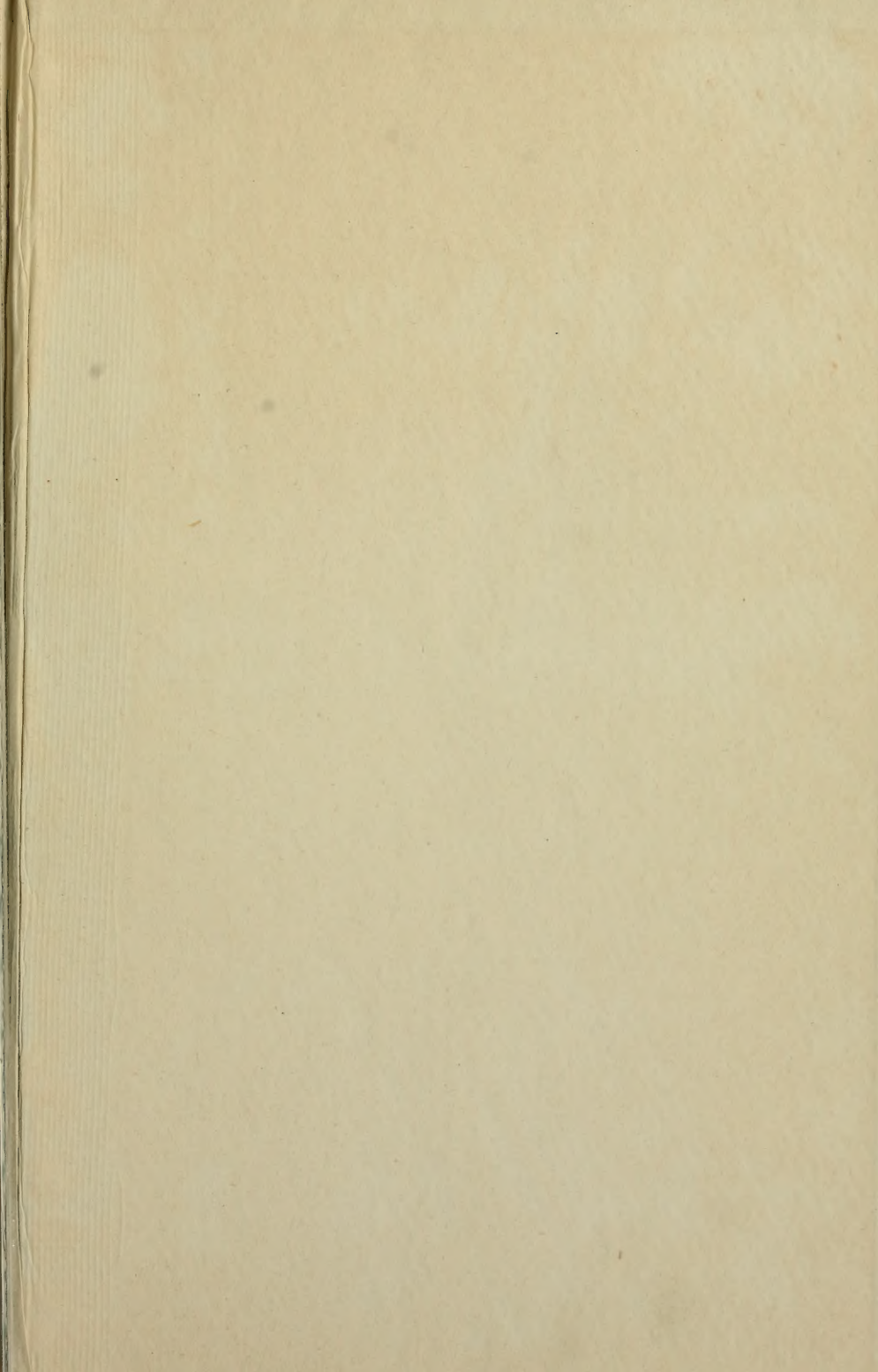
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